Eszter Bánffy

The 6th Millennium BC boundary in western Transdanubia and its role in the Central European Neolithic transition

(The Szentgyörgyvölgy-Pityerdomb Settlement)

VARIA ARCHAEOLOGICA HUNGARICA

XV

Redigit
CSANÁD BÁLINT

Publicationes Instituti
Archaeologici Academiae Scientiarum Hungaricae
Budapestini

ESZTER BÁNFFY

THE 6th MILLENNIUM BC BOUNDARY IN WESTERN TRANSDANUBIA AND ITS ROLE IN THE CENTRAL EUROPEAN NEOLITHIC TRANSITION

(THE SZENTGYÖRGYVÖLGY-PITYERDOMB SETTLEMENT)

Budapest
2004

Translation
Magdaléna Seleanu
Word processing
Eszter Bánffy, Judit Solti
Desktop editing and layout
Benjamin Makovecz
Photos
Róbert Fenyvesi, Krisztina Pálfay
Illustrations
Eszter Bánffy, Andrea Nagy, Sándor Ősi, Zsolt Réti, Csaba Peterdi
Cover Design
Gyula Mayer
Title Page
The ox figurine from Szentgyörgyvölgy-Pityerdomb

This publication was supported by the following project grants:
HRF (OTKA) T 30637
NRDP (NKFP) 5/0063/2002

All rights reserved. No part of this publication may be reproduced and transmitted in any form or by any means, electronic or mechanical, including photocopy, recording or any other information storage and retrieval system, without prior permission in writing by the publisher.

© Archaeological Institute of the HAS, 2004
Director Csanád Bálint

© Eszter Bánffy, 2004

ISBN 963 7391 85 1
HU – ISSN 0237–9090

Printed in Hungary, by
AKAPRINT Nyomdaipari KFT., Budapest

CONTENTS

FOREWORD 15

Chapter 1 INTRODUCTION 19

The natural environment of the Kerka Valley and the western Transdanubian Hill region 19

The geographic setting 19

Soils 20

Hydrology 21

Climate 22

Vegetation 22

The earliest human settlement in the western borderland 23

Mesolithic prelude? 23

The Early Neolithic: the earliest settlement remains 23

The settlement network of the Transdanubian Linear Pottery 24

Chapter 2 SZENTGYÖRGYVÖLGY–PITYERDOMB: DESCRIPTION OF THE SETTLEMENT 29

The site 29

The layout of the settlement 35

The size of the settlement 36

Description of House I 37

Description of House II 40

The characteristics features of the Pityerdomb houses 43

The daub fragments and the walls 43

Hearths 43

Hypothetical reconstruction of the Pityerdomb settlement and its houses 45

Orientation 45

The size of the houses 46

The construction of the houses 46

The Pityerdomb settlement after the destruction of the house (the taphonomic evidence) 49

Chapter 3 THE ORIGINS OF THE LINEAR POTTERY HOUSE 51

Introduction 51

The earliest buildings 51

Possible Mesolithic antecedents 53

The Early Neolithic buildings of South-East Europe 58

Early Neolithic buildings in Central Europe 65

Orientation of the houses 68

A negative example: the "ploshchadki" 70

The survival of the Linear Pottery longhouse in Transdanubia 70

Conclusions 71

Chapter 4 SZENTGYÖRGYVÖLGY–PITYERDOMB:
DESCRIPTION OF THE SETTLEMENT FEATURES AND THE POTTERY FINDS ... 75
Trench I ... 75
Trench II ... 144

Chapter 5 EVALUATION OF THE POTTERY FINDS ... 216
Statistics ... 216
Conclusions drawn from the statistics ... 220
Fabric ... 221
Vessel types ... 225
1.Bowls ... 225
1.1. Conical bowl ... 225
1.2. Biconical bowl with a non-incurving upper part ... 226
1.3. Biconical bowl with a concave upper part ... 228
1.4. Bowl with a rounded carination and a slightly indrawn or cylindrical rim ... 229
1.5. Bowl with an S profile ... 229
1.6. Bomb shaped bowl ... 230
1.7. Hemispherical bowl ... 231
1.8. Bowl with strongly indrawn rim ... 231
1.9. Bowl with the curved wall thickening toward the base ... 232
2. Pedestalled vessels ... 232
2.1. Ring base ... 232
2.2. Low, conical pedestal ... 233
2.3. Low, flaring pedestal ... 233
2.4. Low, incurving pedestal ... 234
2.5. High, incurving pedestal ... 234
3. Cooking pots and storage jars ... 234
3.1. Storage jar with outturned rim ... 234
3.2. Storage jar with cylindrical neck and ovoid body ... 235
3.3. Storage jar with indrawn rim ... 235
3.4. Flask shaped storage jar ... 236
3.5. Vessels the size of cooking pots ... 236
3.6. Pannier shaped vessel (?) ... 236
4. Cups and mugs ... 238
4.1. Straight cup with rounded base ... 238
4.2. Cup with indrawn rim ... 238
4.3. Biconical cup with incurving upper part ... 238
4.4. Cup with slightly indrawn rim and sectioned base ... 239
4.5. Hemispherical cup ... 239
4.6. Cup with curved side ... 239
5. Miniature vessels ... 240
5.1. Miniature vessel with an S profile ... 240
5.2. Biconical miniature vessel with incurving upper part ... 240
5.3. Miniature pedestal ... 240

6. Suspension vessel 240
7. Vessel bases 242
7.1. Strongly profiled base 242
7.2. Rounded base 243
7.3. Straight base 243
8. Vessel handles 244
8.1. Horizontally set handles 244
8.2. Vertically set handles 244
9. Spouted vessel 244
10. Footed vessel 245
11. Vessel lid (?) 246
Vessel decoration 246
1. Special treatment and decoration of the vessel surface 246
1.1. Dark red slip and polish 247
1.2. Black-topped technique 248
1.3. Black painting 249
2. Applied ornaments 250
2.1. Knobs and lugs 250
2.1.1. Small, round, often pointed knobs 250
2.1.2. Finger impressed knob 250
2.1.3. Notched, bipartite knob 251
2.1.4. Protruding, rectangular knob 252
2.1.5. Upward curving lug handle 252
2.1.6. Large, flat knob 252
2.2. Barbotine 252
2.2.1. Applied barbotine 252
2.2.2. Channelled barbotine 253
2.3. Finger impressed ribs 253
3. Impressed and incised decoration 254
3.1. Finger impression, pinched decoration 254
3.1.1. Finger impression, pinched decoration on the rim 254
3.1.2. Finger impression and pinched decoration on the vessel body 255
3.2. Incised linear pattern 255
3.2.1. Single lines 256
3.2.2. Multiple lines 256
3.2.3. Spiral meanders 257
3.2.4. Zig-zag lines and 'rain pattern' 258
3.2.5. Linear patterns arranged into fields 259
3.2.6. Linear pattern on vessel handles 259
3.3. Smoothed-in lines 259
Other clay finds 261
1. Spindle whorl 261
2. Loom and net weight 261
3. Miniature clay bead 262

4. Pintadera 262
5. Clay artefact of unknown function 264
6. Burnt daub 265
Summary 265
Vessel forms 266
Vessel ornamentation 266

Chapter 6 CULT FINDS AND THEIR SIGNIFICANCE IN THE MESOLITHIC-NEOLITHIC TRANSITION 269
Idol head 269
Human foot representation 272
Fragment of a vessel with hand shaped lug 274
Animal figurine 278
Altar fragment 286
Discussion: The Balkanic and possible local roots of the early Transdanubian Linear Pottery 288
The religious beliefs of early farming communities 289
Vestiges of pre-Neolithic beliefs 292
The process of transition 296
The development of beliefs in the later Neolithic of the Carpathian Basin 298

Chapter 7 THE ABSOLUTE DATE OF THE PITYERDOMB SETTLEMENT AND ITS PLACE AS COMPARED TO OTHER CONTEMPORARY SITES IN THE REGION 301

Chapter 8 SUBSISTENCE AND CONTACTS 313

Chapter 9 SETTLEMENT PATTERNS AND REGIONAL CONTACTS DURING THE TRANSITION TO THE NEOLITHIC IN TRANSDANUBIA 319
Late Starčevo (Spiraloid B) sites in Transdanubia 319
Probable Mesolithic sites 321
Sites of the early and classical (Keszthely) phase of the Transdanubian 325
Discussion 330
The Starčevo settlement pattern 330
The Linear Pottery settlement network 334
The appearance of cultivated cereals 335
The earliest pottery 336
The direct evidence for Mesolithic settlement 346
Lithic raw material and stone tools 347
Transport, waterways and long-distance routes 351

Chapter 10 THE ROLE OF TRANSDANUBIA IN THE EMERGENCE OF THE CENTRAL EUROPEAN NEOLITHIC 355
The salient features of the Neolithic transition in western Transdanubia (Summary) ... 355
The direct evidence 355
The indirect evidence 356

The transition to the Neolithic in South-East Europe –
similarities and differences compared to the Transdanubian model 360
The Greek mainland 362
The Marmara and the western Pontic region 364
The Struma–Vardar–Morava Valley route 368
The Danube Gorges and the Lower Danube region 369
The eastern Carpathian Basin 371
The Voivodina, the Danube-Tisza Interfluve and Slavonia 374
The transition to the Neolithic in the Danube Valley and the Central European heartland 378
Southwestern Slovakia and eastern Austria 378
Southern Germany to the Wetterau region 381
Western Transdanubia and the Central European heartland:
expansion and regional contact networks 385
The significance of migration and its traces in the diffusion of food-producing economics 385
The causes behind the expansion and the survival of the contact networks 390
AFTERWORD 395
ABBREVIATIONS 399
BIBLIOGRAPHY 403

FOREWORD

This study was born from the interplay of a series of coincidences.

The first of these was my participation in various archaeological research projects in Transdanubia. I have worked in western Transdanubia since 1984. Following the rescue excavations in the Little Balaton region, I participated in the Hahót Valley Micro-Region Project, conducted in an area lying west of Lake Balaton. The main goal of this project was the reconstruction of the settlement history of the valley based on the information gained from planned, rather than unforeseen rescue excavations. Finally, I also directed the Kerka Valley Micro-Region Project, investigating an area by Hungary's western border neighbouring on eastern Styria in Austria and the Mura region in Slovenia. The one and a half decades spent in this region were instrumental in formulating a new approach to some of the problems concerning the Early Neolithic and the preceding Mesolithic and, hopefully, in offering my own contribution to this field of research. My earlier studies discussed various aspects of the final phase of the Neolithic and the Early Copper Age.

The second of these was a case of sheer good luck. As it turned out, we did not find a single Early Neolithic site of the Linear Pottery culture in the Hahót Valley and I was convinced that the valley lay beyond the western boundary of the early Linear Pottery distribution. The northwestern boundary of the Starčevo distribution was believed to lie along the southern shore of Lake Balaton. It seemed quite certain that we could not expect the discovery of either Starčevo, or Linear Pottery sites in western Zala county. However, during our very first field survey, we found Linear Pottery sherds scattered over the surface at Szentgyörgyvölgy–Pityerdomb, a site lying by the westernmost village of the Kerka Valley. I had initially planned a small sounding excavation at the site, until I would find a major Lengyel or Balaton–Lasinja site. As a matter of fact, I only realized the importance of the Pityerdomb site in 1995, at the end of the first excavation day, when the first batch of sherds had been properly washed and cleaned. I had the feeling that I was looking at Starčevo pottery decorated with the occasional linear pattern. An early Linear Pottery or late Starčevo site in a westerly region with a climate typical for the Alpine foreland seemed most unlikely, both from a chronological and a geographical viewpoint.

The third of these was not entirely mere chance. I systematically reviewed the available information and the find assemblages from the sites in the Balaton area and western Transdanubia, including both the ones known only from topographic descriptions and the more recently excavated ones. The information thus gained raised a number of issues similar to the ones encountered when studying the shift to the Neolithic in other regions.

There has been a proliferation of studies on the late Mesolithic and the Early Neolithic, on the interaction between the two, as well as on the environment, the lifeways, the subsistence patterns, the demography, the genetics, the sociology and the rituals of these two periods. Any overview of these issues is a challenging task, and even more problematical is the determination of the general features characterizing the transition to the Neolithic from the rich archaeological record and of the individual traits specific to a particular period and region. In addition to my research in Hungary, I had the opportunity to spend two weeks in Vienna, and one and a half months in the library of the Department of Prehistory and Early History of Heidelberg University. Following these study trips, I became increasingly convinced that I should not restrict this study to the detailed description of the Pityerdomb site, but should also include the evidence provided by the

Early Neolithic finds from the Balaton region and western Transdanubia – evidence indicating that one of the major frontiers and contact zones between the early farming communities and the indigenous Mesolithic population lay in this region. My other objective was to demonstrate that each of the comparable contact zones in other parts of Europe had certain individual features – the western Transdanubian frontier too showed a number of individual traits, influenced by the natural environment and the communities inhabiting the area, that were particular to this region. The importance of the western Transdanubian zone lies in the fact that Central Europe was colonized by groups whose transition to the Neolithic can be best described by the western Transdanubian model. The mixing of the immigrant communities with the indigenous groups, the ratios between the two groups, varying from region to region, determined the cultural trajectory along which Central European civilization developed.

The starting point of the study is the Pityerdomb settlement; however, in the search for the origins of the settlement layout, the houses, the ceramic finds and their parallels, I shall make wide detours to South-East Europe and Central Europe. The reason for the rhythmicality in the study was not intentional, fuelled by the need to return and start afresh from the stove, but a spontaneous process during the exploration of how Neolithic lifeways were adopted in Transdanubia and the study of the long-term effects of the transition to the Neolithic.

Transdanubia plays an important role in the study of neolithization, in the shift to sedentism and food-production. According to the traditional model of neolithization, this region marked the last and the northernmost station in the seaborne and inland Balkanic migration of Neolithic farmers. It was, at the same time, the starting point of what has been labelled secondary neolithization, namely the Neolithic transformation of Central and Western Europe.

One of the by now widely accepted models of the New Archaeology was A. Ammermann and L. Cavalli-Sforza's "wave of advance" model, describing how and when the first Neolithic impulses reached different parts of Europe, originally designed to bolster J. Clark's theory with evidence from genetic studies. This process occurred with significant delay in the west and north. This model remained prevalent in Early Neolithic research for some two decades; today, the accumulating evidence has led to the modification and, in some areas, to the downright rejection of the earlier colonization model. The concept of the Neolithic too needs to be revised. In the old terminology, the earliest Neolithic culture in Northern Transdanubia was assigned to the Middle Neolithic owing to the earlier dating of the Starčevo and Körös cultures in the south. This is not the single problem with the use of this label. The criteria of a Neolithic life-style seemed inflexible only until the model of a population vacuum in Central Europe and the Carpathian Basin at the close of the Mesolithic was not rejected. Today, there is need for caution in this field of study. The presence of an indigenous hunter-gatherer population must by all means be reckoned with in the regions north of the Central Balkans, irrespective of whether there is direct evidence for their presence, as in the Danube Gorges, the Jászság and Germany, or whether the evidence is indirect, as in the case of Transdanubia, Slovenia and certain areas of Austria. The life-style of these indigenous communities shows a number of 'Neolithic' traits, such as partial sedentism, the conscious encouragement of the spread of certain plant species and the raising of local, more-or-less domesticated animals. It has been convincingly argued that as a source of timber necessary for house construction, woodlands played an important role in the life of early food-producing communities and represented far too great a value for large-scale clearing operations.[1] At the same time, the lifeways of the immigrant Balkanic groups did not differ radically from those of the indigenous population. There is increasing evidence from both Körös and late Starčevo sites,

[1] *Kreuz* (1990).

as well as from the earliest Transdanubian Linear Pottery sites, that grain cultivation was restricted to the open areas between houses and the sedimentary strips of land along watercourses, and that hunting and foraging continued to play an important role in subsistence.

The earlier model, according to which the subsistence patterns of the indigenous and the immigrant communities differed markedly from each other, has come under serious fire. It seems likely that in the western part of the Carpathian Basin we can assume a fairly long period of trade and cultural contacts, an exchange of commodities and innovations between the indigenous groups and the Balkanic immigrants. It is unclear whether this contact was friendly or took some less friendly form. The existence of a contact zone of this kind can be conceptualized in a region where the raising of South-East European animal and plant species ran into difficulties owing to ecologic and climatic reasons, one consequence being the deceleration of the earlier rapid diffusion and the possibility of protracted contact with indigenous groups. Lake Balaton, an open body of water, as well as the Zala, Rába, Kerka and Mura Valleys occupy a rather special position in this respect. The hunter-gatherer groups of the late Mesolithic probably lived by the shores of open waters, avoiding the dense woodlands of the late Boreal-early Atlantic that were rather poor in wild game and fruits. At the same time, waterways and valleys played an important role in the creation and maintenance of contact and exchange networks. Lake Balaton, the Mura and the other rivers were important routes of communication, reflected by several boat finds and a variety of imported commodities. The earlier model of neolithization with its single explanation has been discarded. The study of the transition in smaller regions has revealed the fascinating interplay of a wide range of complex forces.

The above brief overview of the problems in this field of research provides ample justification for discussing these issues in connection with an Early Neolithic site in western Transdanubia: to examine the transition to the Neolithic in this region in a broader context and to determine to what extent the earliest Neolithic finds support the existence of a frontier in the forested hilly region west of Lake Balaton.

The cornerstone of the study is a detailed description of the Szentgyörgyvölgy–Pityerdomb settlement. I have also relied heavily on the findings of the research projects conducted in three western Transdanubian micro-regions. I have also studied the earlier finds from the Balaton Uplands, with particular emphasis on the assemblages from the radiolarite mine at Szentgál and the finds from the Vázsony and the Tapolca Basin. The early Linear Pottery finds brought to light in 2000 during the rescue excavations preceding the construction of the M7 motorway along the southern shores of Lake Balaton, and especially the assemblages from the Balatonszemes area, were particularly helpful in reconstructing water routes. In the autumn of 2000, I began a research project on the problems of neolithization with J. Petrasch of Tübingen University in the Fajsz area, on the left bank of the Danube. This project, promising exciting new results, also helped in setting the Early Neolithic of Transdanubia in a new perspective in the light of fresh evidence.

During my research I received generous help from my colleagues and friends who approached the problems of the Early Neolithic in the Carpathian Basin from different angles and who – to my delight – often arrived at similar conclusions as I did while seeking answers to these questions. I am particularly grateful to my mentor, Nándor Kalicz, and to Katalin T. Biró and Pál Sümegi – without their constant encouragement and support, my enthusiasm would have soon waned. I am quite certain that this study would have taken a different course without Eva Lenneis' habilitation study, her new findings and the many conversations I had with her. I also wish to thank Judit Regenye, Róbert Kertész, Tibor Marton and Krisztián Oross, Imola Juhász and Erika Gál for generously

sharing their knowledge with me. I am grateful to Róbert Fenyvesi, Lucia M. Glattfelder, Ágnes Zamadits, Ida Polgár Szathmári, Sándor Ősi, Zsolt Réti and Csaba Peterdi for conserving, restoring and photographing the Pityerdomb finds, as well for their help in planning the illustrations to this volume. With her many comments on the style, Magdaléna Seleanu did more than simply translate text; Judit Solti made also many small corrections. My thanks to both of them.

I often exchanged lengthy letters with colleagues working in other countries and, whenever possible, had also conversations with them. Their thoughtful comments and insights too shaped this study. In this respect I am indebted to David Anthony, Ofer Bar-Yosef, Peter F. Biehl, Clive Bonsall, Dušan Borić, Mihael Budja, John Chapman, Elmar Christmann, Christiane Frirdich, Roland Gläser, Avi Gopher, Svend Hansen, Harald Hauptmann, Olaf Höckmann, Eva Lenneis, Detlef Gronenborn, Jan K. Kozłowski, Jacek Lech, Malcolm Lillie, Jens Lüning, Joseph Maran, Inna Mateiciucová, Jörg Petrasch, Douglass Price, Agathe Reingruber, Erzsébet Ruttkay, Sabine Schade-Lindig, Klaus Schmidt, Helmut Spatz (who sadly died in a tragic accident in 2000), Elisabetta Starnini, Sofia Stefanović, Jak Yakar, Alasdair Whittle and Marek Zvelebil. The lively debates and discussions following my presentation of the Pityerdomb finds as university lectures and in conference papers, as well as the many recent studies were a great incentive to compare the finds and findings my own excavations and of other sites in the region with the transition to the Neolithic in other areas.

Finally, I am grateful to my husband and children for their loving support and encouragement. This book is dedicated to my son Márton and to my daughter Kinga Kamilla.

Chapter 1

INTRODUCTION

The natural environment of the Kerka Valley and the western Transdanubian Hill region

The geographic setting

The three regions investigated in western Transdanubia as part of the three micro-region projects were all characterized by diverse environments, ranging from marshy river and stream valleys to forested hills. *(Fig. 1)* The Kerka Valley lies on the western Hungarian periphery, at the meeting point of two significant regions: the Alpine foothills, the forested southern part of the Őrség region (the Vas ridge) and the northern part of the Lenti Basin, the fringes of the so-called Hetés Plain. These two regions essentially determine the nature of this area. The westernmost extension of the north–south range of the Zala Hills (Pórszombat, Szilvágy, the Kissziget area and the valley of the Cupi stream) and the forested, often strongly articulated mountain remnants with furrows and ridges of the gently rolling Alpine foothills (the western part of Szentgyörgyvölgy, part of Márokföld, Felsőszenterzsébet and Alsószenterzsébet) represent one these landscapes. The geologic imprint of the palaeo-Danube and its tributaries can also be noted in the north–south valleys: this palaeo-river flowed towards the Drava subsidence basin.[1] The alluvial fan of the palaeo-Rába and the various branches and tributaries of the Kerka deposited their sediment after reaching this plainland from the eastern Alps. These mainly take the form of pebbly sediments that can be identified with the low pebble terraces along the Szentgyörgy stream, especially between Kerkaújfalu and Csesztreg, as well as to the south, on the small 'islet' between two branches of the Kerka in the Zalabaksa and Kerkabarabás area. The central part of the investigated area lay in this plainland: Ramocsa, Kerkafalva, Kerkaújfalu, part of Márokföld, Nemesnép, Csesztreg, Zalabaksa, Baglad and Resznek. The same holds true for the villages north of Lenti (Zalaszombatfa, Belsősárd, Külsősárd and Lentikápolna) in terms of landscape geography, although these were not part of the surveyed area.

The highest point of this region does not exceed 230–260 m a.s.l. in the hilly region and 180–190 m a.s.l. in the plainland. Of the pebbly-clayey monadrocks, the Szentgyörgyvölgy rock is the highest, rising 257 m a.s.l.[2]

East of the Lenti Basin, filled by the branches of the Kerka River, up to the marshland of the Little Balaton, the Zala region of western Transdanubia is characterized by a series of north to south flat ridges and valleys, reflecting the one-time course of the Danube. This north to south fragmentation is to a large extent reflected in the lower-lying marshy areas: the ridges rising above the marshland have a similar orientation.[3] The Hahót Valley is a relatively broad valley, traversed by the Széviz and Válicka Streams, as well as the Principális Channel (the one-time Kanizsa Stream). The flood-plains of these watercourses are marshlands.[4] Smaller and larger islets, no longer visible to the naked eye, rose above the waterlogged valley, and only their traditional names indicate their origins: Gelsesziget, Sárkánysziget, Buzádsziget (*sziget* means "island"). These islets were often chosen for settlement by human groups from prehistory to the Middle Ages as shown by the sites on them.

[1] *Cseke* (1994) 15.
[2] *Marosi–Somogyi* (1990) 445–449.
[3] *Pécsi* (1981).
[4] *Radó* (1974).

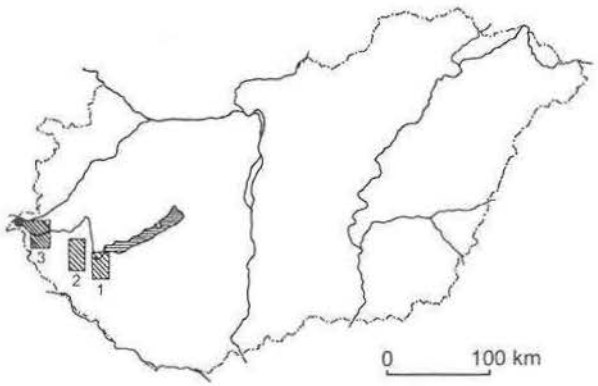


Fig. 1. Map of Hungary showing the three micro-region project areas in Transdanubia

The Hahót Basin is separated from the Little Balaton by a single north-south hill. This north-to-south fragmentation can be especially well observed in the Little Balaton region. The Balaton is not an old lake: the formation of the Keszthely Basin can be dated to the second half of the last glaciation, i.e. it is no more than 18–20 thousand years old.[5] Its eastern basin was formed some five thousand years later.[6] The Keszthely Bay, the Tapolca Basin and the Little Balaton share the same geographic and climatic characteristics and they are more or less co-eval: they lie between two later formations with differing tectonic features, namely the eastern basin of Lake Balaton and Lake Hévíz.

The draining of the one-time Little Balaton was completed in the 1950s; the rehabilitation of the area and the re-inundation of the former marshland area with water were begun in 1979. As a result of these operations, the eutrophication of the Keszthely Bay decreased, the natural flora and fauna of the region was revived and, also, it became possible to investigate the archaeological sites that would be destroyed by the earth-moving operations or would be later inundated.

In the early phase of its history, Lake Balaton was much larger, with an oft-changing shoreline. Similarly to other shallow lakes, its infilling began shortly after its formation and as a result, in certain periods it receded to a smaller area and split into a series of unconnected, smaller basins.[7] In wetter periods with more precipitation, the tendency was the exact opposite, with the Tapolca Bay becoming part of the lake and the water flowing down the north–south valleys in the south, eventually running into the Drava. In a later period still, the Sió became the only drainage.[8] The one-time drainage system, resembling a herringbone pattern, survived in the small, north–south oriented lakes and marshlands lying among the Somogy Hills.

Soils

It follows from the above brief overview of the geography of the region that three main soil types can be distinguished in the investigated micro-regions.

The forested hills and the smaller clearings, meadows are covered with a medium quality, acidic, often clayey forest soil. The clayey and loessy soils often contain iron concretions. Humus formation is rare and thus these soils can be characterized as being of a rather poor quality.

In the plainland, the alluvial sediments that were deposited by the palaeo-Rába and palaeo-Mura determined the evolution of soils during the Lower Pliocene. Later, during the Middle Pliocene, when the two rivers retreated to their current bed, this regions was criss-crossed by the rapid streams and smaller rivers – such as the Kerka – flowing from the Alpine foothills and from

[5] *Harkay* (1996) 7.
[6] *Cserny* (1987) 95.
[7] *Nagy-Bodor–Cserny* (1997).
[8] *Harkay* (1996).

the Őrség in the north; these rivers and streams deposited a new, pebbly sediment. Humus formation was most intensive in this area, resulting in the appearance of medium quality soils. These plainland areas are usually cultivated and, more rarely, used as grazing land.

The third soil type can be found in the oft-meandering bends of the rivers and streams. The entire region inclines towards the Drava Valley, towards which these streams and rivers flow. This inclination decreases from the periphery of the hilly northern and western periphery, the Kerka river's flow velocity decreases and, bypassing its alluvium, the meandering river breaks into several branches. The oxbows along the Kerka and the various streams enclose deeper lying waterlogged, stagnant, marshy areas that were regularly inundated by the spring floods that repeatedly deposited their loam. These areas are characterized by a peat soil with a special microclimate.

The soils of the Hahót Basin resemble the ones in the Lenti Basin. The main difference between the two regions is that the gleyification of the one-time loessy ridges is less perceptible. Acidic, clayey soils were formed to a lesser extent owing to the smaller amount of precipitation. The other difference can be attributed to the smaller gradient and slower flow of the rivers: while pebbly sediments transported from the eastern Alpine slopes abound along the tributaries of the Kerka, these sediments occur extremely rarely in the Hahót Basin. Better quality soils can be found between the undrained marshy valleys and the waterlogged meadows owing to the loess on the flat, north-south ridges than on the western fringes lying in the Alpine foreland climatic zone. The wind also played a role in the formation of loessy areas since looser soils were blown from the open hilltops to areas less exposed to the wind; these slopes are still covered with a thicker loess layer.[9]

The soils of the Little Balaton too differ from the western areas of the Zala Hills in their proportion: there are more marshlands and areas covered by water, while the islets and ridges rising above the marshlands are covered with a fertile, loessy sediment. Sand also occurs: for example, there was an active sandpit, exploited until recent decades, near Balatonmagyaród–Hídvégpuszta-Déli rév.[10]

Hydrology

As shown by its name, the third micro-regional investigated area can be identified with the valleys of the Kerka and its tributaries and the hilly regions enclosing them. The Szentgyörgy Stream in the west and the Cupi Stream flowing from the north to the south in the east must here be mentioned. Uniting with a few smaller creeks, the Szentgyörgy Stream flows into the Mura between Hosszúfalu (Dolga Vaš) and Alsólendva (Lendava) in Slovenia. The Cupi Stream flows into the Kerka in the Kerkabarabás area, while the Kerka flows into the Mura in the Kerkaszentkirály–Muraszemenye area, near the Croatian border.

These north to south flowing rivers and streams are characterized by a minimal discharge; there is hardly any water in the riverbeds during the summer in the northern part of the Lenti Basin, i.e. the westernmost investigated area. This changes dramatically in the rainy season and during spring when the snow melts: the Kerka often overflows in the Alsószenterzsébet, Csesztreg, Zalabaksa area, causing serious floods. The hydrology of the Hahót Basin is determined by two streams flowing north into the Zala and the Principális Channel running toward the south; the two streams flow into the river a little east of Zalaegerszeg, while the Principális reaches the Mura near the Drava mouth. The watershed ridge between the two drainage areas has become eroded and is barely visible.[11] In contrast to the dry ridges, the deeper lying stream valleys are mostly unsuited

[9] *Szőke* (1996) 13.

[10] *Bánffy* (1996d) 21.

[11] *Radó* (1974).

to agricultural cultivation, being waterlogged meadows resembling the floodplain valleys of the Kerka. The main difference between the two regions is that with the exception of the Zala, there are no watercourses susceptible to flooding in the Hahót Basin and the Little Balaton area. Both areas are calmer in terms of their hydrology.

The hydrology of the Little Balaton area is essentially determined by three types of waters: the Zala, turning north with a sharp bend, the basins with open water and the area with lagunas[12] (beside Garabonc and Zalavár, for example) and the waterlogged marshland areas. The Zala mouth is also marshy. The water level fluctuation of Lake Balaton, often exceeding several meters within one year, influenced the waters in the Little Balaton area.[13]

Climate

The investigated area is one of the wettest regions of Hungary, with an annual rainfall of around 1000 mm, gradually growing towards the west. Sixty-five per cent of this annual precipitation falls in the growing season and the rainfall is around 100 mm even in July, the driest month.[14] The climate is more or less sub-Alpine, oceanic: there is less difference between the summer and winter temperatures than in the more easterly part of Zala county or in Transdanubia in general. This is especially true of the hilltops and the forested areas, but even the plainland receives a fair amount of precipitation. The highest daily precipitation was recorded in Csesztreg: 97 mm. The snow-covered, frosty period is also quite long, lasting from mid-October to late April.[15]

The number of sunny hours is relatively low for Hungary: 1800 hours.[16] In the section analyzing the results of the field survey it will be shown that there is no reason to assume that this relative humidity had changed during prehistory or the historical periods. Although dryer and wetter, cooler and warmer periods obviously alternated with each other and this undoubtedly influenced the climate of this area, it would nonetheless appear that the region, compared to other regions in the Carpathian Basin, was characterized by a predominantly temperate sub-Alpine climate.

Vegetation

The original natural vegetation of western Transdanubia was characterized by closed forests: beech and oak forests, pinewoods mixed with deciduous species, gallery woods and willows in the valleys.[17] The shrub stratum of these mixed pinewoods was similar to that of beech woods. The presence of pine species does not necessarily mean montane or Alpine types: the warm, humid, sub-Mediterranean influence from Slovenia had a marked impact on the climatic history of western Transdanubia. The pines in this region can probably be assigned to one of the Mediterranean sub-species.[18]

Thriving on peat land, Scotch pine also appeared in the beech and oak forests. In the areas exploited as grazing lands, pedunculate oak woods were gradually replaced by durmast oak forests, better adapted to dryer conditions and often mixed with hornbeam and alder near streams. Peat bogs are also quite frequent in the region owing to the hydrogeological conditions. These bogs, often a habitat for rare, protected plant species, can most often be found in the waterlogged, marshy stream and river valleys. Peat is mined in several areas, for example along the road leading to Pötréte in the Hahót Valley.

[12] *Harkay* (1996).
[13] *Nagy-Bodor–Cserny* (1997); *Harkay* (1996).
[14] *Rakonczay* (1996) 250.
[15] *Marosi–Somogyi* (1990) 446.
[16] *Rakonczay* (1996) 250.
[17] *Müller* (1996) 7.
[18] *Culiberg* (1999) 373; *Cserny–Nagy-Bodor* (1999) 383–384; *Andrić* 2001.

Meadow and forest-meadow associations are also quite characteristic; these often alternate with one-time agricultural land that is currently uncultivated owing to the economic crisis in the wake of the disintegration of the agricultural cooperatives. These fields were, sadly, rapidly overgrown by weeds. A part of the plainland has been drawn into agricultural cultivation.

The northern fringes of the Kerka Valley micro-region between the outskirts of Szentgyörgyvölgy and Magyarföld was at one time a closed military territory that was not used either for agriculture or for forest clearing, the result being that the original beech and oak woods survived undisturbed: this area is currently a nature reserve. Its 38 per cent forestation makes it one of the most heavily forested regions of modern Hungary.[19]

Phytogeographically this region represents a transition between the Zala (Saladiense) subtype of the Hungarian southern Transdanubian flora province (Praeillyricum) and the Alpine foreland (Praenoricum) flora region.[20]

The earliest human settlement in the western borderland

Mesolithic prelude?

Similarly to other areas of the Carpathian Basin, there is no direct evidence for the pre-Neolithic occupation of the Kerka Valley and the neighbouring hilly region. We did not find any features resembling the Mesolithic settlement remains in the Jászság,[21] or stone tools, such as the ones collected at Kaposhomok in southern Transdanubia,[22] indicating the presence of a Mesolithic population. It would nonetheless be premature to conclude that the Kerka Valley was uninhabited during this period. Suffice it here to recall earlier claims for the lack of Mesolithic occupation in the Great Hungarian Plain where a number of Mesolithic settlements have since been identified. There is no good reason to believe that Mesolithic hunter-gatherer groups would have avoided areas with a similar natural environment, even assuming that the greater part of the Carpathian Basin and Central Europe had been sparsely populated preceding the population growth of the Neolithic. The following section will review the indirect archaeological and environmental evidence for the possible Mesolithic settlement of this area. The western periphery of Hungary is noteworthy in terms of the Mesolithic settlement of this region since the forested area alternating with gently rolling hills in the eastern Alpine foreland may have proved attractive to smaller hunter-gatherer communities.

The Early Neolithic: the earliest settlement remains

Although there are few late Starčevo sites in Transdanubia, three of the currently known seven sites lie in western Transdanubia. At Becsehely, lying by Hungary's western border, settlement finds of the earliest Linear Pottery were also found in addition to the Starčevo settlement.[23] The Vörs–Máriaasszonysziget settlement lies on an islet in the marshland of the Little Balaton, while the settlement uncovered at Gellénháza–Városrét was sited on one of the hill ridges south of

[19] *Gyuricza* (1999) 64.
[20] *Rakonczay* (1996) 28, flora map; *Debreczy* (1981) 75–119.
[21] *Kertész* (1994); *Kertész* (1996); *Kertész et al.* (1994).
[22] *Pusztai* (1957); *Marton* (2003).
[23] *Kalicz* (1978–79); *Kalicz* (1990).

Zalaegerszeg.[24] According to N. Kalicz, another group of sites forms a separate category: although the pottery recovered from these sites was predominantly Starčevo-like in nature, the lack of fine wares and a few other differences, as well as the occasional occurrence of linear patterns, nonetheless suggested that these should be regarded as representing the earliest Linear Pottery phase. The sites identified in the Sármellék region, at Zalavár and on the northern shores of Lake Balaton can similarly be assigned to this group. N. Kalicz assigned the pottery from Pityerdomb to this group, even though the wares from this site included red-slipped, polished fine pottery of the Balkanic type.[25] I had the chance to study the finds from the other sites belonging to this group: some of the pottery fragments could be assigned to the Starčevo culture, while others rather to the early Linear Pottery, although it must in all fairness be noted that these categorizations are rather arbitrary owing to the smallness of most pottery samples.[26]

The earliest Neolithic settlements in the hills and low river terraces flanking the Kerka Valley can be linked to the Transdanubian Linear Pottery (TLP). We were lucky to have excavated a site dating to the earliest phase of this culture on which we could observe features and finds indicating the blend of population groups with different cultural traditions. This blending reflects the presence of two distinct cultures, two distinct lifeways and two distinct subsistence strategies, the implication being that the typical traits of the earliest Linear Pottery evolved from this blend in this region.

To the above we may add an argument drawn from environmental studies: P. Sümegi and R. Kertész's remarks on the prehistoric forest clearing in the Carpathian Basin. They found traces of extensive slash-and-burn forest clearing in the area they had investigated.[27] Although this forest clearance could be linked to the activity of early farming communities, the currently available evidence nonetheless indicates that intensive agricultural production cannot be assumed for the earliest Neolithic and that the cleared areas were utilized as grazing fields for domesticates.[28] We also know that the late Mesolithic population practiced forest clearing in several areas of Central Europe in order to create a better environment for thermophilous fruit trees that would allow them to collect higher yields.[29] The spread of hazel, that could be stored over winter, is generally attributed to this practice and it has also been suggested that local horticulture, preceding agricultural cultivation, can perhaps be traced to this practice.[30]

The settlement network of the Transdanubian Linear Pottery (Fig. 2)

Of the nearly two hundred sites identified during the micro-region research projects in the Little Balaton region, five could be dated to the earliest Linear Pottery culture and twenty-two to the classical or late (Zselíz) phase of the culture. In view of the density of sites, it came as somewhat of a disappointment that none of the seventy-eight new sites registered in the Hahót Basin to the west of the Little Balaton could be dated to the period preceding the Late Neolithic. At the time we interpreted this as meaning that the Hahót Basin marked the western boundary of the culture's

[24] *Kalicz–M. Virág–T. Biró* (1998); *H. Simon* (1994); *H. Simon* (1996).

[25] I would here like to thank Nándor Kalicz for his help and valuable comments.

[26] I would here like to express my gratitude to Judit Regenye (Veszprém, Laczkó Dezső Museum; Tapolca, Municipal Museum) and Róbert Müller (Keszthely, Balaton Museum) for their kind permission to study the finds. I would also like to thank Katalin H. Simon and László András Horváth who described the comparable sites and their finds in Zala county, now published in their new monograph. *Horváth–H. Simon* (2003).

[27] *Kertész–Sümegi* (1999) 18. Cp. also *Cserny–Nagy-Bodor* (in press), on the traces of Mesolithic forest clearance observed at Szentgyörgyvölgy.

[28] *Gronenborn* (1999) 146.

[29] Such observations were made on the shores of Lake Zürich: *Erny-Rodman et al.* (1997) 38–40; *Gronenborn* (1999) 138.

[30] *Sümegi* (2001) 27.

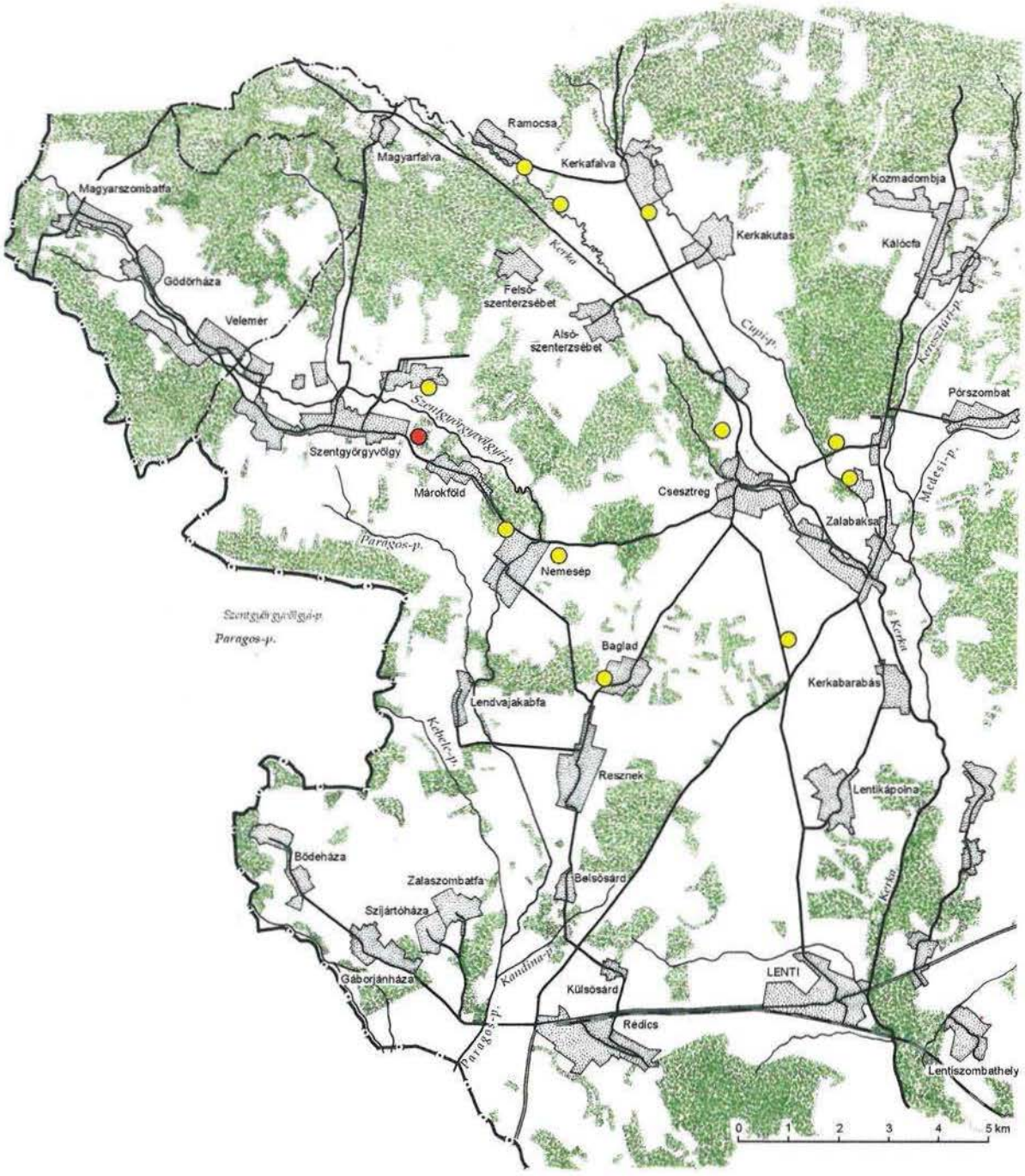


Fig. 2. Linear Pottery sites in the Kerka Valley micro-region

distribution and probably actually lay beyond this boundary since we could conceive of no other explanation for the absence of sites, seeing that the low-lying waterlogged meadows and the surrounding hill ranges provided environmental conditions similar to the ones in the Little Balaton region. It came as an unexpected surprise that twelve of the fifty-eight new sites identified in the Kerka Valley, lying some 55 km farther west than the Hahót Basin, could be assigned to the Linear Pottery. The high number of sites is complemented by a series of off-site observations, namely that a handful of pottery fragments from chaff tempered vessels and chipped stone blades of red Szentgál radiolarite were collected from almost all of the ploughed fields. These stray

finds cannot be interpreted as marking a settlement, but rather as an indication that these fields had been used and cultivated by Linear Pottery communities and that these finds reached the fields with manure. Another interesting observation is that these off-site phenomena were observed not on the higher-lying hills, but on ploughland with floodplain soils lying near water. It is quite possible that while settlements were established on river terraces and elevations, agricultural activity was practiced on lower-lying wet and less clayey land. This cultivation, however, can by no means be regarded as particularly intensive either in the Kerka Valley or in the environment of other early Linear Pottery sites.[31]

It is also possible that these were articles lost during the use of grazing fields and pathways. Be as it may, the off-site scatter of finds between individual Linear Pottery sites again reflects an unusually intensive Early Neolithic occupation in the Kerka Valley.

The sites can be assigned to two main types according to their location: one part of the sites lay on flat river terraces, but not directly beside the river itself, the other group on the slopes of the hills rising above the streams flowing into the rivers. Both site types are typical for the Early Neolithic.[32]

The most intensive Linear Pottery site was the settlement at Kerkabarabás–Barabási háromszög. The lower lying parts of the area between Zalabaksa and Kerkabarabás, called Nagy-berek, outline the course of the one-time stream. The terrace above it, on which the site lays, was no more than 3–4 m high. We found about 6–7 greyish patches about 250 m from the one-time stream, all lying perpendicular to the watercourse. One typical representative of the other settlement type was the settlement on a small hill called Pityerdomb by Szentgyörgyvölgy and the site at Haraszti-erdő, lying on the opposite side of the Szentgyörgy Stream, but also farther from the water.

Obviously, it is quite possible that these settlements did not mean so many smaller communities, but rather the successive settlements of the same population in search of new agricultural land and grazing fields. This possibility is suggested by the single layer settlement with two houses uncovered at Szentgyörgyvölgy–Pityerdomb and by the less intensive settlement features of the Linear Pottery culture identified during the field surveys. The few stray vessel fragments representing the classical (Keszthely) phase recovered from the upper part of the debris at Pityer-domb too support this interpretation.[33] These finds suggest a few strongly eroded settlement features, i.e. small, transient classical Linear Pottery campsites or settlements. It would seem that after a few generations the descendants of earlier communities returned to the place where the one-time houses had stood. Unfortunately, erosion was so strong that it is impossible to ascertain whether it was mere chance that later Linear Pottery groups settled on the same hilltop or whether the choice of location was a conscious return to a formerly abandoned settlement and whether the red burnt debris of the one-time houses was still visible when they returned. The findings of recent excavations in Germany suggest that family traditions survived for several generations: this is reflected in the adherence to certain artefact types and lithic raw material from distant regions, as well as in the remembrance of the location of the ancestors' settlement.[34]

[31] *Gronenborn* (1999) 146.

[32] *Kneipp* (1998) 14; *Lenneis* (1982) 2–5; *Schier* (2000) 167; *Schmidgen–Hager* (1992) 45; *Schwitalla* (1996) 70–75; *Reinecke* (1982); *Růlf* (1982).

[33] Katalin H. Simon made similar observations during her excavation of early Linear Pottery sites in Zala county: a few stray sherds from a later Linear Pottery phase usually lay on top of the debris of early settlement features; these sherds apparently came from later settlement features that were destroyed. I would here like to thank Katalin H. Simon for sharing this information with me. Cp. also Chapter 2.

[34] *Frirdich* (1994); *Lüning* (2000) 15.

One of the most extensive woodlands of Hungary can be found on the flat ridges flanking the Kerka Valley. There is no geographic, climatic or archaeological evidence to suggest that this forestland had been smaller at the beginning of the Neolithic or that there had been intensive forest clearing at that time. This environmental reconstruction raises the question of whether the occupants could indeed have seen the Linear Pottery settlement on the opposite hill (that is clearly visible today across the ploughed land) and, also, of whether the empty area between the two houses of the Pityerdomb site had originally been a strip of forest that divided the houses from each other. However, in view of the dense forestation we cannot entirely reject the possibility that smaller tracts of forest had been cleared during the mid-6th Millennium or that there had been settlements in what is today woodland (cp. the forested tracts on the map of the Kerka Valley micro-region). In the latter case we may even assume the double of the currently known twelve Linear Pottery sites that would imply a very dense settlement network for this period.[35] However, even in the case of a settlement density resembling the one in the Kerka Valley, the settlement network of this period can best be conceptualized on the basis of German analogies, i.e. a loose chain of smaller hamlets and farmsteads occupied for no more than two or three successive generations.[36]

[35] This settlement density is even higher than the one of the 'niches' in Lower Austria. *Lenneis* (1982) map 2; *Lenneis* (1989) Fig. 1; *Lenneis* (2001). Cp. also *Schier* (2000) 13.

[36] *Lüning* (1988b); *Schier* (2000) 168.

Chapter 2

SZENTGYÖRGYVÖLGY–PITYERDOMB: DESCRIPTION OF THE SETTLEMENT

The site (Fig. 3.)

One of the westernmost sites in the Kerka Valley micro-region was identified in 1995. The most densely populated part of the village of Szentgyörgyvölgy lies on a longish, east–west oriented hill. Its western edge extends almost to the Slovenian border and, at the same time, it marks the boundary between Zala and Vas counties. Proceeding eastwards, one first encounters the Reformed church with its ceiling of painted wooden panels, then the Catholic church decorated with Dorffmeister frescoes (both buildings are listed monuments). The cemetery lies in the eastern part of the village, together with a small conical mound, the Pityerdomb [Pityer Hill]. The highest point of this mound

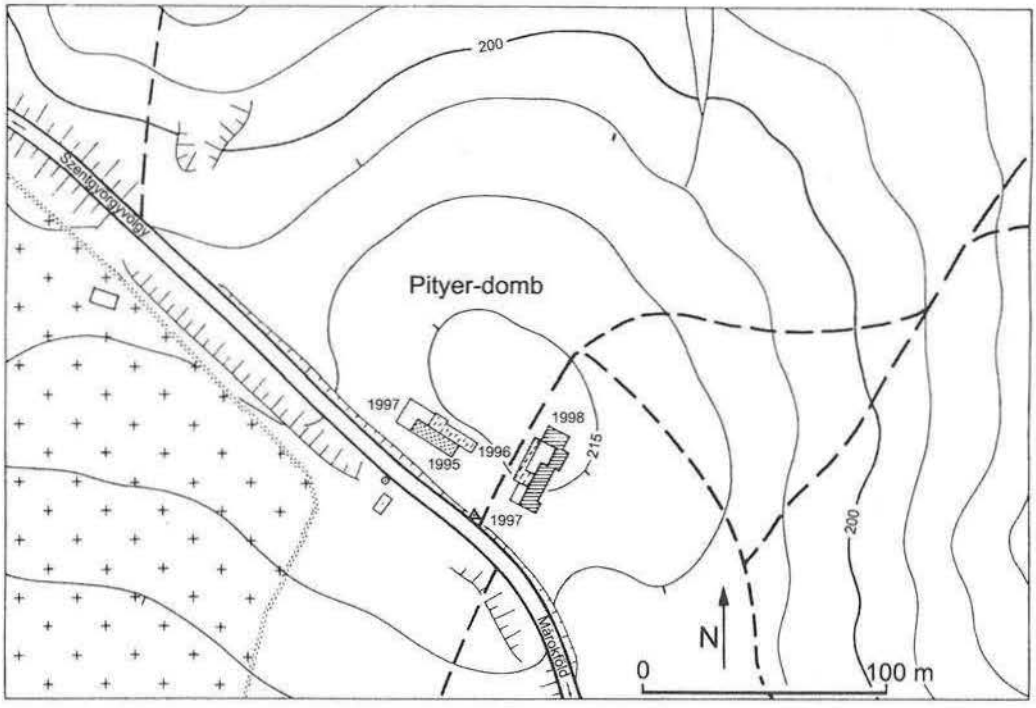


Fig. 3. Pityerdomb. Contour map showing the investigated area

is 220 m; it slopes towards the west and north and, to a lesser extent, to the east, while the road cuts through its southern side. The artificial depression dividing the top marks the administrative boundary between Szentgyörgyvölgy and Márokföld, meaning that the site's eastern section is in fact part of Márokföld. Since the investigation and excavation of the site was begun in an area belonging to Szentgyörgyvölgy, the site was registered under this name.

The village hill and the northern slope of Pityerdomb both extend into a waterlogged marshland that is traversed by the meandering Szentgyörgy Stream, flowing to the east. The stream flows some 120 m from the site and since we did not find any wells during the excavation, it seems likely that the occupants of the prehistoric hamlet drew their water from the stream. Although several pollen samples were collected from the marshland, we could not distinguish any prehistoric

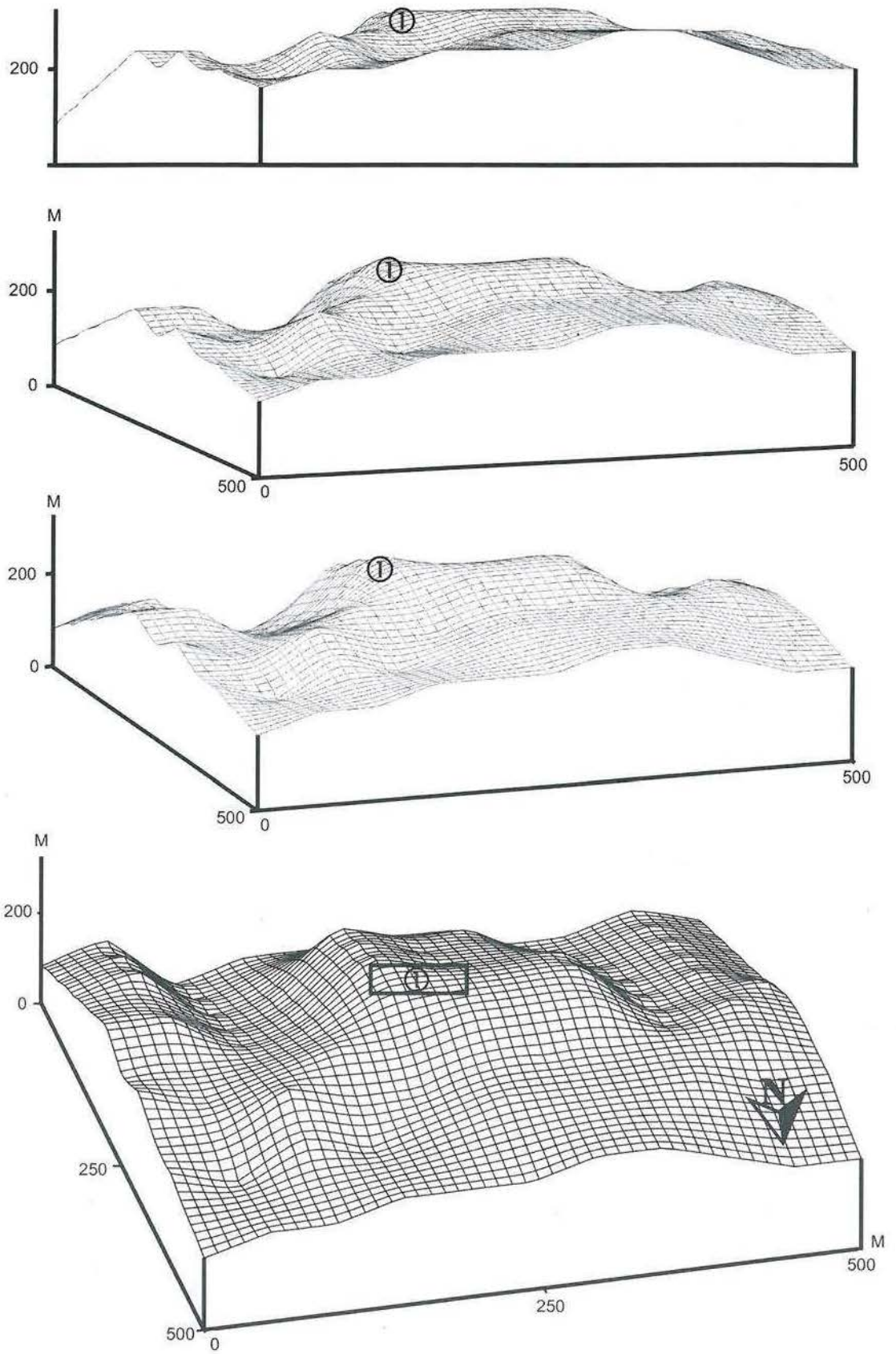


Fig. 4. Szentgyörgyvölgy–Pityerdomb. 3D map of the site (after Pál Sümegi)

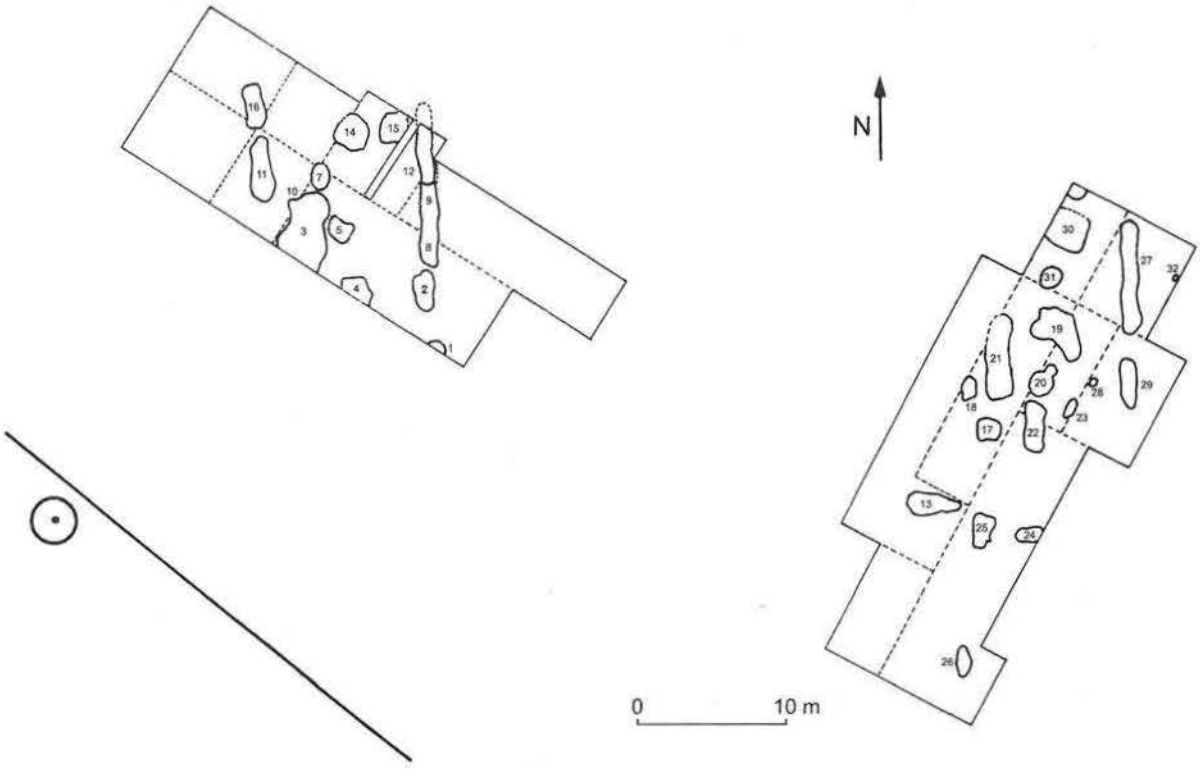


Fig. 5. Szentgyörgyvölgy–Pityerdomb. Trenches I and II

pollens in these samples and thus the direct environment of the site can only be reconstructed from the macro-botanical finds.[1]

The conical form of the site[2] reflects a typical clayey monadrock covered with a thin humus layer *(Fig. 4)*. Iron concretions occur frequently in the subsoil. Only maize and vegetable species, such as pea, potato and pumpkin, could be raised on this poor quality soil. The acidic, clayey sediment destroyed the bones. The white contours of animal bones could often be observed in the excavated pits, but only tiny crumbs of the actual bones survived.

The excavations confirmed the observations made during the field survey, namely that although shallow ploughing affected the archaeological layers, it did not destroy or disturb them too much. In practice this meant that the first Neolithic features were found at a depth of 25–27 cm from the surface *(Fig. 5)*. In places where it had not been disturbed by prehistoric intrusions, the virgin soil usually lay at a depth of 30 cm.

Few settlement features from later periods were found: the earliest of these can be assigned to the classical (Keszthely) phase of the Transdanubian Linear Pottery and can be dated to the period following the destruction of the first settlement, as shown by a few stray finds of thin-walled pottery sherds decorated with wide linear patterns from the upper layers. Linear Pottery sherds from the culture's later phase are often found in the uppermost layer of other early Linear Pottery settlements: this phenomenon has been observed on other Linear Pottery sites in Zala county and, also, in more westerly areas, such as Lower Austria, where later Linear Pottery

[1] Cp. Chapter 8.

[2] The GPS coordinates of Szentgyörgyvölgy–Pityerdomb are the following: 46°,43,350; 16°,25,783 (I would here like to thank Zsuzsa Miklós for the data).

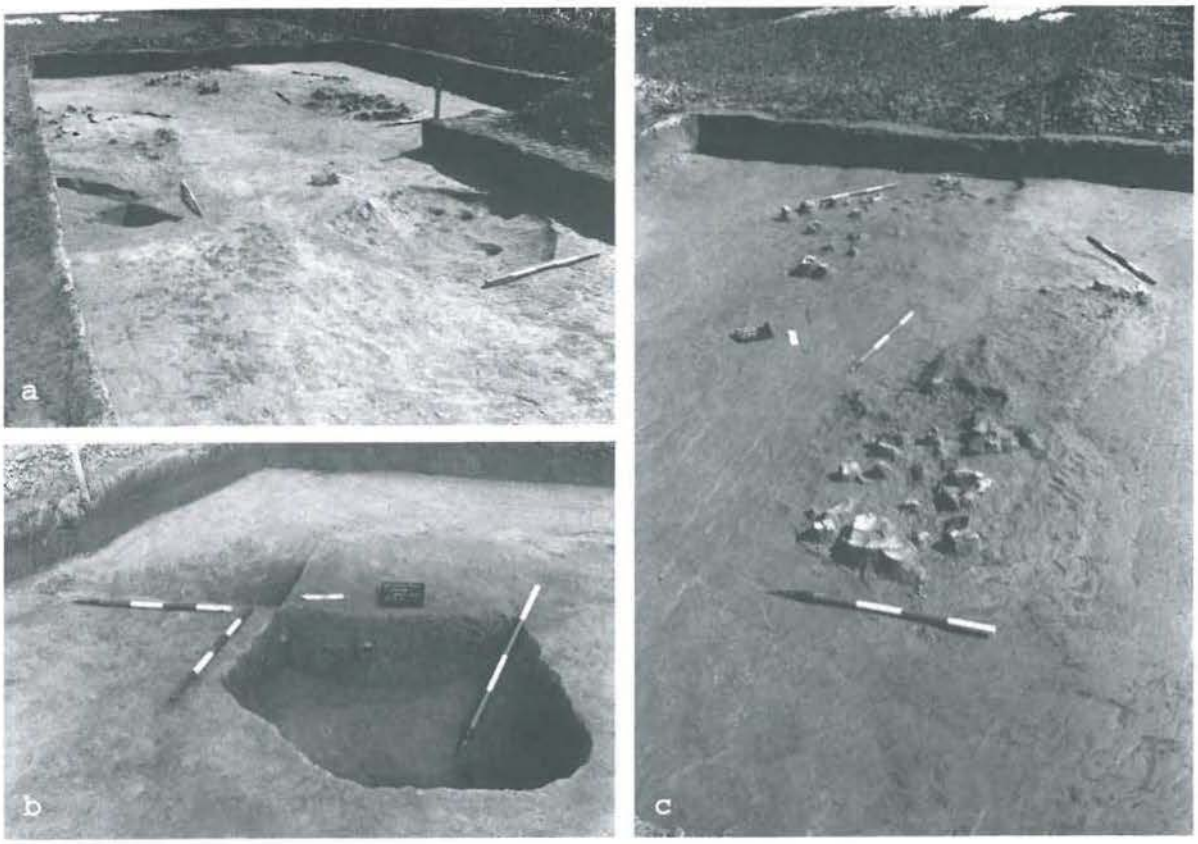


Fig. 6. Szentgyörgyvölgy–Pityerdomb. a: Trench II. b-c: Feature 19

sherds were found on seventy per cent of the earliest Linear Pottery sites.[3] This would suggest that these locations – including the Pityerdomb site – were not only suitable for settlement, but also that later Linear Pottery communities had some recollection of these villages and hamlets, or had perhaps discovered the remains of the burnt houses. Be as it may, these later Linear Pottery groups did not establish a permanent settlement either at Pityerdomb or in its close vicinity.

Another interesting phenomenon is that a similar Linear Pottery site lay within eyeshot of the Pityerdomb hamlet. This other site and the evidence for so-called 'off-site' land use in the area indicate a rather dense settlement in this area. Although it is near impossible to assign off-site tiny sherds and stone implements to a specific sub-phase of the culture, the intensive settlement at the Pityerdomb site indicates the permanent presence of the culture among the hills of the Kerka region.

Stray finds from two other periods were also collected at the Pityerdomb site: two separate, destroyed settlement features of the Middle Copper Age Balaton–Lasinja culture were identified when clearing the upper 25–28 cm layer in Trenches I and II. These were indicated by a few pottery sherds and a clay ladle with perforated handle, lying scattered over two smaller areas. It is also possible that a third settlement feature can also be associated with the Copper Age: Feature 28, an open-air hearth whose burnt foundation lay higher than the one-time Linear Pottery occupation surface. Even though this feature did not yield any finds, its position suggests that it may have been one of the features of a briefly occupied Balaton–Lasinja settlement.

[3] Kind oral communication of Katalin H. Simon, Cp. also *Horváth–H. Simon* (2003); *Harrer–Lenneis* (2001) 34.

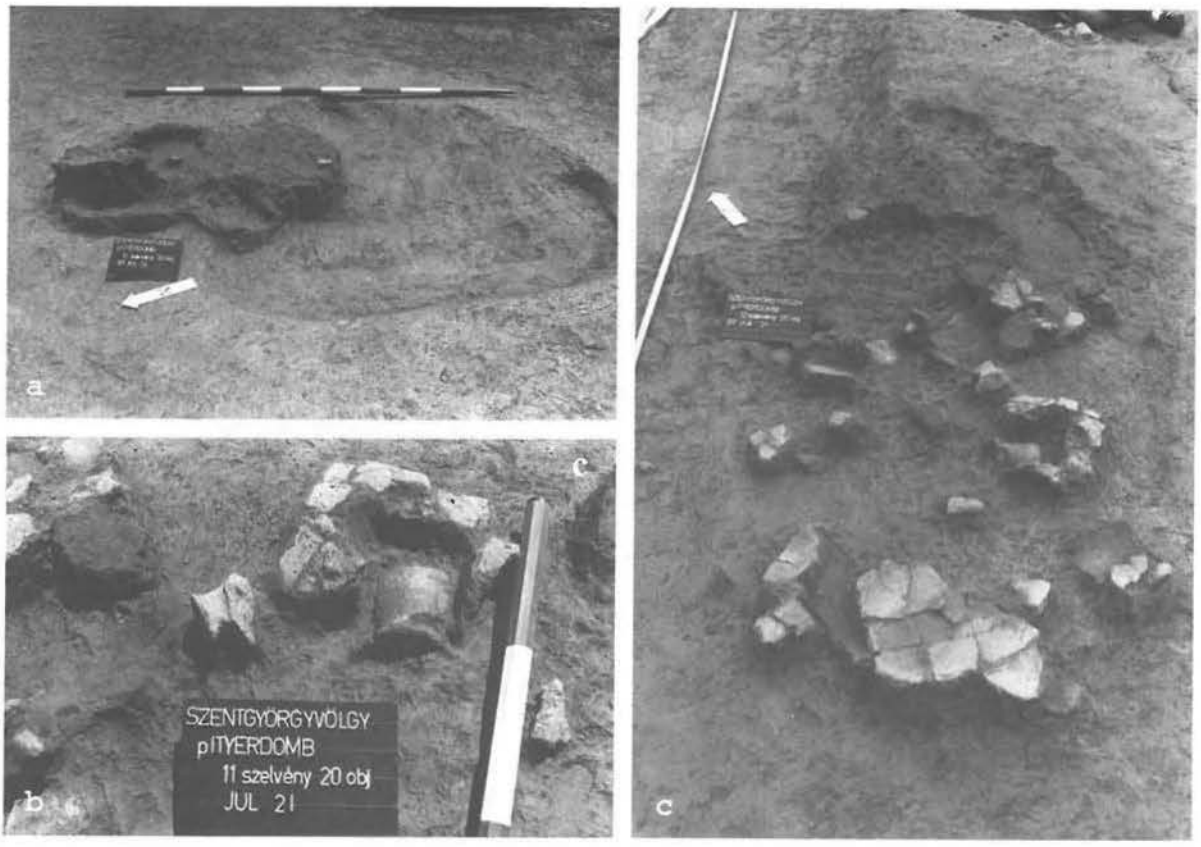


Fig. 7. Szentgyörgyvölgy–Pityerdomb. a-c: Feature 20

Late medieval sherds, crushed into tiny fragments by ploughing, were found in both trenches. These pottery sherds can undoubtedly be interpreted as coming from the chain of small medieval hamlets (called "*szer*" in Hungarian) that played an important role in the late medieval life of the Szentgyörgyvölgy village: they can perhaps be associated with the hamlet called Kerámia ["pottery"] lying some 150 m to the west, so named after its pottery workshop. It is also possible, however, that these scanty pottery finds merely indicate medieval land use in the area and had gotten mixed up in the manure taken to the ploughland.

The Neolithic site lay around the highest point in the western part of the mound, as well as on the northern–northwestern slope of the longish, east–west oriented Pityerdomb *(Fig. 8a)*. No settlement features were found on the cone itself, although this may be due to the strong erosion that could easily have destroyed any settlement debris and shallow pits. The Neolithic features in the areas lying 2–3 m lower had survived more or less intact, undisturbed by erosion and ploughing.

An intensive survey was conducted over the entire area of the site. Every square metre was surveyed at least five times, during different times of day and under diverse weather conditions, and every surface find was collected. The observations made during the survey complement the results of the excavations.

The settlement features observed during the survey were restricted to two distinct areas; this was also confirmed by the excavations. Each of these two areas, marked by discoloured patches, contained the remains of a house and the clay extraction pits, refuse pits and fireplaces around them. The two settlement concentrations – or houses – lay at a distance of 33 m from each other and neither the repeated intensive surveys, nor the sounding revealed additional archaeological features between the two.

Fig. 8. Szentgyörgyvölgy–Pityerdomb. a: the site; b-f: Feature 12

A total of thirty-one settlement features – thirteen in Trench I, eighteen in Trench II – were uncovered over an area of some 1000 m² during the four excavation seasons. We may say that we managed to uncover the greater part of the settlement, in spite of the rather meagre funds obtained for the excavation (meagre even in comparison to other planned excavation projects), and in spite of the difficulties caused by the damaged and often inadequate equipment, as well as by the rainy weather almost causing floods during the last three campaigns. There may be a few smaller pits to the east, where we did not find the settlement's boundary, as well as to the south, where the settlement is traversed by the road, although possible settlement features in both directions can only be very sporadic. We did not find any settlement features in the area south of the road during our survey, meaning that the settlement did not extend to that area.

We could not open a trench in the south owing to the macadam road. However, the communal work organized by the Szentgyörgyvölgy council for clearing the embankment flanking the road, the straightening of its wall using a power shovel and the digging up of the area along the road for tree planting allowed the observation of the area. We monitored the area disturbed by the power shovel and the fresh 'sections' in its wake. It became clear that House 1, a feature we could not excavate completely owing to the road, did not continue across a distance of 2 m from the excavated area, and neither were there any settlement features, pits or even stray finds indicating Neolithic settlement in the area.

Similar surveys indicate that the settlement section uncovered in Trench I had no continuation to the north and neither did there remain a large unexcavated section of the settlement towards its northern boundary in Trench II since we registered a decreasing scatter of finds during the field survey, in spite of the natural erosion. Even if a few pits remained unexcavated, these can hardly have contained much additional 'information'. It would naturally have been better if we could have determined the settlement's boundaries with certainty, but in view of the difficulties outlined above, we may say that we can hardly be dissatisfied with these results.

The layout of the settlement

The Pityerdomb settlement lies on the northern and northwestern side of the 217–220 m high cone, not far from its peak. The Szentgyörgy Stream flows in a north–east direction under the northern slope of the hill in a wide, marshy valley and turning south, it runs into the Paragos Stream at Lendvajakabfa. The nearest Linear Pottery settlement lies on the northern side of this marshy valley, on a small hill similar to the Pityerdomb (Szentgyörgyvölgy–Haraszti erdő). To the north we find a large woodland area, with one of the main branches of the Kerka flowing parallel to the Szentgyörgy Stream. Three Linear Pottery settlements have been identified in the valley between Ramocsa and Csesztreg. Although it was near impossible to determine the extent of these settlements from the surface finds, it seems likely that none of these settlements were larger than the one at Pityerdomb. The conspicuously high number of Linear Pottery settlements in a small region could, in theory, provide a good basis for comparison with Austrian and German micro-regions and with the 'niche' type settlement concentrations of the Linear Pottery culture. Several such settlement concentrations have been identified, for example in the Rosenburg area in Austria,[4] in the Wetterau area and in the Merzbach Valley in Germany.[5] Of these, only the latter has been systematically explored and thus the internal chronology of the other 'niches' cannot be precisely established. A similar situation can be assumed in the Kerka Valley: it is my impression that the Linear Pottery settlements at Haraszti erdő, Kerkabarabás–Barabási háromszög and elsewhere are only slightly later that the Pityerdomb site, although in the lack of excavations this cannot be confirmed.

The findings of the intensive survey and the excavation of the site indicate that the Pityerdomb settlement consisted of two houses and the associated refuse pits, clay extraction pits and other features. The two buildings and their yards were separated from each other by a 33 m wide open area without any settlement features or finds.

The relative chronology of the two houses could not be established on the basis of the finds recovered from them and from the features around them. However, this does not necessarily imply that the buildings were used contemporaneously. It has been repeatedly suggested that the houses of the earliest Linear Pottery settlements were not occupied for more than two generations. The use-life of these houses is estimated at fifteen to twenty or fifty years at the most.[6] It is therefore theoretically possible that a new house was built near the first one after its destruction also at the Pityerdomb settlement. Still, it seems more likely that that the two houses were contemporary and that each was inhabited by a nuclear family. This is also confirmed by the typical settlement patterns of the formative Linear Pottery period: a loose string of farmsteads and hamlets, often lying quite far from each other, rather than larger closed settlements.

The distance between the two houses does not exclude their contemporaneity, even more so, since we know that early Linear Pottery settlements were characterized by fairly large open areas between the houses. At the Langweiler 8 site, for example, two contemporary houses were spaced 66 m apart, while at Mohelnice the distance between the earliest houses ranged between 10–25 m; at Holohlavy in eastern Bohemia, the three earliest Linear Pottery houses lay 30 and 45 m from each other.[7] In the light of the above, the 33 m distance between the houses at Pityerdomb was not particularly great.

Another argument for the contemporaneity of the two houses is the manpower needed for their construction. According to P. Halstead's estimates, an average living space of 10 m^2 per person was the norm on permanent settlements, or a little less if close relatives lived under the same roof.[8] At

[4] *Lenneis* (1989); *Lenneis* (2002 [2001]).

[5] *Lindig–Schwitalla* (1999); *Lüning–Stehli* (1994); *Frirdich* (1994); *Collard–Shennan* (2000).

[6] *Lenneis* (2002 [2001]) 187–189.

[7] *Lüning* (1982) 147–148; *Coudart* (1998) 108; *Stäuble* (1994); *Tichý* (1998) 50; *Pavlů* (1981); *Pavlů–Vokolek* (1992) 83–84.

[8] *Halstead* (1984) 187–189.

Pityerdomb we may assume that each house was occupied by about eight to ten persons (cp. the section on the size of the houses). The occupants undoubtedly included children, a few elderly persons and women, meaning that there were about three or four able-bodied men to each house. J. Lüning made different calculations concerning the construction of Linear Pottery houses.[9] According to his estimates, the weight of a horizontal beam was around 840 kg and he assumed that the strength of twelve men was necessary for lifting the beam. He suggested that at Pityerdomb, where the buildings contained only the central section the Linear Pottery longhouse, the beam weighed about 500 kg, meaning that about seven or eight men were needed for lifting it.

Accepting these calculations it would appear that the construction of a house exceeded the capabilities of its future occupants. However, the number of able-bodied men in the families inhabiting the two houses at Pityerdomb was enough for the construction of these buildings. A roughly similar workpower was needed for digging the clay extraction pits. The labour investment necessary for the construction too suggests that the two houses of the Pityerdomb settlement were built at the same time.

The size of the settlement

In Hungary, the remains of Linear Pottery longhouses have only been discovered and excavated during the past few years, mostly on the large-scale excavations preceding the motorway constructions. Although these include buildings that can be dated to the earlier Linear Pottery phase (for example at the Füzesabony–Gubakút site), houses from the earliest period are very rare, especially in Transdanubia. Unfortunately, no houses, only pits were found at Gellénháza, Vörs and Andráshida–Gébárti-tó III, the early Linear Pottery settlements in Transdanubia that are closest to the Pityerdomb settlement both geographically and chronologically. Very often not even the presence of pits could be established during the survey of the early Linear Pottery sites along the western shore of Lake Balaton.[10] Thus we can only quote the already known Western European sites for comparisons concerning settlement size.

The earliest settlements are distinguished by their rather small size in the long Linear Pottery period. This is also true of large settlements, such as Mohelnice in Moravia and Bylany in Bohemia. At the latter site I. Pavlů excavated a total of 157 houses; he noted that there were no more than six contemporaneous houses at any one time in the early period.[11] In Austria, four contemporary houses were reconstructed at Strögen,[12] and seven early Linear Pottery houses at Rosenburg.[13] One single house was identified at Mold.[14] Six houses were assigned to the earliest phase at Schwanfeld in Bavaria, one at the Wang/Freising settlement and two at Mintraching.[15] According to K. Reinecke, there were two or three contemporaneous houses at Altdorf near Landshut.[16] Nine houses were dated to the oldest phase at Bruchenbrücken.[17] P. J. R. Modderman has noted that the earliest Linear Pottery settlements in Bohemia and Holland had no more than three or four houses,[18] while S. Milisauskas and J. Kruk estimated that the number of houses on the earliest Linear Pottery settlements ranged between one and ten.[19]

Although settlements with houses are lacking from the same period in Transdanubia, it is quite obvious that the small hamlet with its two houses and the associated workshops and pits

[9] *Lüning* (1982); *Zimmermann* (1995) 71.
[10] MRT 1; MRT 2.
[11] *Pavlů* (1981) 534–543; *Pavlů et al.* (1986); *Pavlů* (2000).
[12] *Lenneis–Lüning* (1986a); *Lenneis* (1990); *Lenneis* (2001); *Stäuble* (2002 [2001]).
[13] *Lenneis* (1988) 94.
[14] *Lenneis* (1995) 18.
[15] *Lüning–Modderman* (1982); *Lüning* (1987) 33; *Hillmeyer* (1989) Fig. 3; *Lüning* (1987).
[16] *Reinecke* (1983) 39.
[17] *Stäuble* (1997).
[18] *Modderman* (1988) 98–99.
[19] *Milisauskas–Kruk* (1989) 404.

uncovered at Pityerdomb does not differ from other early Linear Pottery settlements. The field surveys conducted in the Kerka Valley suggest that most Linear Pottery settlements in this area were of a similar size, although – in the lack of excavations – this is more of an impression based on the surface finds. This stands in stark contrast to the Early Neolithic settlements of South-East Europe that were considerably larger.[20] Economic reasons can perhaps be cited for the small size of the early Linear Pottery settlements, although the explanation favoured by most prehistorians is the apparent lack of any social stratification.[21] This issue will be discussed in greater detail in the chapter on the spread of the Early Neolithic in Transdanubia (Chapter 10).

Description of House I[22]

A total of fifteen settlement features were uncovered in trench I *(Fig. 9)*. One of these (Feature 1) can be regarded as an extra-mural feature. Its date is uncertain since it lay relatively high (its burnt patch lay 19–23 cm under the present surface) and there were no associated finds. It can therefore be interpreted as an open-air hearth outside the house or as a feature that can be associated with a group of the classical Linear Pottery culture (Keszthely phase) who returned to the site (as shown by a few stray pottery finds), or as a fireplace of the Middle Copper Age Balaton–Lasinja culture since a pit of this culture was found in Trench I.

The other features can be associated with a single building: Features 2, 8, 9 and 12, as well as Features 11 and 16 were part of a long, north oriented pit *(Fig. 8b-f)*. These Features probably mark the longitudinal extent of the house, in other words, the living space of the house lay in the area bordered by these pits. Since the distance between the inner walls of these pits was 9.5 m, the width of the house cannot have been greater, although a width of 8–8.5 m seems more likely. Its entrance lay on the southern side, not far from a triple posthole (Feature 4).

The depth of the pits varied, ranging between 67–92 cm even within a single feature. They did not deepen in any direction (for example, the similar pits of the earliest Linear Pottery houses in Germany deepened towards the south). A deep, narrow trench running parallel to the pit, and widening in some spots, was observed in Feature 12. These wider sections were deeper on the outer side and the greatest depth of 118 cm was measured in one of these spots.

A deep, irregular pit was uncovered on the southern side of the building (Feature 4). Its average depth was 65–69 cm and there were three smaller, round pits inside it (86 cm, 87 cm and 86 cm deep, the latter was the outermost pit towards the west and it had a depth of 92 cm in one spot). These smaller pits could be interpreted as postholes for thick timber posts. Carbonized wood remains were recovered from the fill of these postholes. Unfortunately, the area to the south could not be investigated owing to the trees and shrubs flanking the road and we could only hypothesize that these three postholes could be associated with the southern end of the house. This assumption was confirmed in the spring of 1999 when the local council of Szentgyörgyvölgy decided to widen the road leading to the village and levelled the embankment flanking the road. The level area thus gained was planted with trees. The council notified us and we were able to monitor the removal of the earth from the area lying some 3–5 m from Feature 4. We also took photographs of the earth-moving operations. No archaeological levels, intrusions, discoloured patches or finds came to light during the earthworks, the implication being that Feature 4 and the postholes mark the southern end of the house.

[20] At Nea Nikomedeia in Macedonia (Greece), there were an estimated 500–700 occupants during three generations, based on the assumption that all the houses were inhabited during one specific phase. Cp. *Andreou–Fotiadis–Kotsakis* (2001) 323.

[21] *Milisauskas–Kruk* (1989) 404; *Lüning* (2000).

[22] For drawings of the houses, see Chapter 3.

The northern end of the house was destroyed by erosion. The northern, rounded end of Feature 12 lay some 10–12 cm under the present surface: the burnt debris and the larger pottery fragments were visible on the surface. In contrast, nothing was found or observed in the area to its north during the repeated field surveys, meaning that the estimated length of the house could be no more than 15 m. It seems likely that the house was about 8 m wide and 13–14 m long.

The stratigraphy of the long pits can be described as follows.

A thick burnt debris, about 30 cm thick on the average, covered the surface by the four long pits along the eastern side. The most intensively burnt daub layer was uncovered in the middle of the house and lay above Features 8 and 9. The position of the debris in the latter pit revealed that the larger wall fragments had fallen lengthwise into the pits outside the house and covered them. One indication of the extent to which these daub fragments had been burnt was that when clearing the burnt debris covering Feature 8 we had initially assumed that we had found the firing plate of an oven.

The burnt house remains had fallen onto a granular, whitish-grey soil mixed with organic substances in each pit. In Features 8, 9 and 12 this layer differed markedly from the layer of burnt daub fragments at a depth of 56–68 cm. In some spots we also observed that this layer had been stamped. Only the greyish layer in Feature 2 contained finds, the same fill in the other features did not yield any artefacts.

The situation was slightly different as regards the pits along the western side of the house. A considerably smaller amount of burnt debris fell onto both features and feature 16 did not contain the granular, greyish layer mixed with organic substances noted in the other pits. The fill of this pit was wettish soil mixed with iron concretions and specks of charcoal, containing few finds. In Feature 11 we found a hard, stamped layer (perhaps also levelled by water) at a depth of 45 cm that overlay a fill of granular, greyish earth with many finds, including an assemblage that can be interpreted as being cultic in nature. This assemblage lay at a depth of 55 cm and was oriented to the north.

Features 3, 5, 6, 14 and 15 lay within the zone formed by the two long pits. Their form was irregular and their depth also varied. However, they did share one similarity with the long pits, namely that the stamped layer overlying the grey mixed layer observed in the long pits could also be observed in these pits. Interestingly enough, fewer – and generally smaller – burnt daub fragments were found on top of Features 3, 5, 7 and 14. An intensive layer of burnt daub fragments was only noted above Feature 15; this can be explained by the fact that this pit lay closest to the features on the eastern side. An impressive amount of finds was uncovered under this burnt debris layer: a large number of stone tools and pottery sherds, as well as a few intact vessels, all of which were found in a horizontal position on the stamped layer. This stamped layer can thus perhaps be interpreted as a floor level or an occupation surface of the settlement. Unfortunately, the floor was not burnt except for a few 1–2 m^2 large patches and it survived in a rather poor state of preservation. The horizontal position of the pottery sherds and stone tools indicated this level even in the areas where the stamped layer could not be observed in spite of the most careful clearing techniques. Only in Feature 14 could we distinguish two separate, superimposed stamped layers. It seems likely that water had flown across the floor and that it had been replastered or stamped again. It is unclear whether the entire floor was renewed or whether the floor was only repaired in this spot.

The phenomena described above can be interpreted in the following manner. Before the construction of the house, a series of north–south oriented, long, rounded pits with an uneven floor was dug at about 8.5 m from each other for clay extraction (Features 9–12). On the testimony of the burnt daub fragments, the walls were erected around a framework of a 2 cm thick wattling daubed

with clay that was carefully plastered on both sides. We did not find any evidence for a timber framework, except for the three postholes at the southern, shorter end of the house that perhaps supported the purlin; another feature that can possibly be interpreted as a posthole was uncovered inside Feature 3. Triple postholes have also been reported from other early Linear Pottery sites, one of the best examples being the early houses unearthed at Strögen in Lower Austria where – similarly to House I of the Pityerdomb site – only the triple postholes survived together with the long pits.[23] The roof structure cannot be reconstructed, although the known analogies would suggest that the gable roof was covered with thatch or reeds thriving along the stream.

The lower section of the pits (40–60 cm) dug for clay extraction were probably infilled during the construction of the house. The rather uniform fill was mixed with organic substances and did not contain any finds. It is possible that a certain amount of clay had fallen back into the pits where it was trodden down by the men constructing the house and a part of the wet clay may also have fallen into them. The upper level of the pits lay slightly lower than the contemporary occupation surface. The known analogies suggest that these open pits also functioned as drainage pits for rainwater and it is possible that they also kept the animals away from the house. Based on his observations made at Niedereschbach near Frankfurt, where a total of twenty-one longhouses dated to the early Linear Pottery phase were excavated, A. Hampel also argued for the relatively rapid infilling of the pits flanking the houses since about 70 per cent of these pits were totally devoid of finds.[24]

We noted a rather interesting phenomenon during the excavation of the house (J. Lüning's study was helpful in interpreting our observations). We found a series of rather thin, obliquely dug posthole in the floor of Feature 12. During his investigation of the early Linear Pottery settlement at Schwanfeld and Elsloo, J. Lüning noted that the smaller posts set obliquely into an outer trench served to support the eaves.[25] The eaves were designed to prevent rainwater from damaging the house walls and to channel the water into the long pits.[26] It is important to note that these smaller posts or stakes did not surround the entire house: the smaller postholes usually lay on one side and only along a section of the wall. It would appear that the small postholes found beside House I at Pityerdomb were similarly dug for posts supporting the eaves. Although Lüning does not mention obliquely dug postholes in his study, the ones found at Pityerdomb definitely support his arguments. The posts set into the long pit beside the house probably supported the roof that extended beyond the walls in the northeastern part of the house. One possible interpretation of the fact that only one part of the roof was supported by additional posts is that this section had perhaps been damaged or sagged dangerously and was in need of repair. This damage possibly occurred not when the house was built, but during its use. A row of similar, smaller postholes were also found in the long pits flanking eight of the twenty-one early Linear Pottery longhouses uncovered at the Frankfurt–Niedereschbach site.[27] As a matter of fact, J. Lüning considered the use of such posts for supporting eaves a characteristic feature of the houses even in the later Linear Pottery phases.

Little can be said about the internal division of the Pityerdomb house. In the lack of internal posts it is impossible to determine whether there had been special activity areas or rooms separated by a wall, although in view of the small size of the house this seems unlikely. The position of the finds did not indicate areas with a special function.

[23] *Lenneis* (1989) Fig. 9.
[24] *Hampel* (1992) 128. Cp. also *Boehlicke* (1982) 24, who had earlier reached a similar conclusion.
[25] *Lüning* (1988a) 290–292.
[26] *Lüning* (1988a) 295.
[27] *Hampel* (1992) 131.

There is little evidence for how long the house was occupied. One possible indication of the use-life of the building is that the occupation surface was not renewed, another is the reparation of the eaves, and a third is the burnt debris covering the finds lying on the occupation surface, suggesting that the occupants abandoned the house after it had burnt down. One interesting observation was that the burnt daub layer was much thicker on the eastern side: considerably more debris had fallen on that side than on the western side. This can perhaps be explained by the prevailing wind direction. It seems likely that the wind also played a role in that the entire roof caught fire owing to a stray spark. The burnt debris indicates a very intensive and rapid conflagration. Many of the vessels lying on the floor were secondarily burnt and a few stone implements too showed traces of burning. There was no time for the occupants to salvage their belongings, this being the reason that many vessels, quernstones and stone implements were found *in situ*. This is quite understandable if we assume that the weather was windy at the time the fire broke out and spread to the entire building. The strong westerly–northwesterly wind probably knocked the burning and collapsing roof, as well as part of the burning wall into the pits along the eastern side. The burnt debris survived undisturbed until the 1995 excavations, as shown also by the direction in which the burnt daub fragments had fallen.

Description of house II

The patch of House II lay 33 m east of House I *(Fig. 72)*. As has already been mentioned above, no settlement features or finds were found between the two buildings, suggesting that they had been separated by a shrubby area with trees.

The interpretation of the second house is slightly more problematic, especially as regards four features that could not be associated with the house. At the same time, the position of these features makes it unlikely that they can perhaps be associated with a third house. In contrast to the other long pits, Features 13 and 24 were oriented to the east. Feature 25, oriented to the north, lay between these two pits, while Feature 26, also oriented to the north, lay less than 10 m to its south, on the highest point of the hill. One possible interpretation of these features was that a third building, originally erected on the highest point of the hill, had been destroyed by erosion. However, this possibility is contradicted by the following observations.

The first is a settlement feature from the Middle Copper Age. Similarly to Trench I, in which Balaton–Lasinja sherds were found in a secondary position over Feature 9, a clay ladle with perforated handle and pottery fragments of the same culture were found in the southern part of Trench II, no doubt from a few features of a temporary Copper Age campsite. These finds were recovered from the mixed earth of the uppermost 20 cm of the trench, a layer devoid of Neolithic sherds. This contradicts a strong, all-destructive erosion since if the soil level covering the uppermost part of the hill had been eroded to the extent that even pits were destroyed in the process, how could the higher-lying Copper Age feature have survived? The same question can be posed in the case of Feature 26. This pit was 53 cm deep and survived intact, and we did not observe any destroyed features in its vicinity.

Another observation concerns the distance between House II and an assumed third house. In view of the fact that no chronological differences can be established between the finds from the individual features using archaeological methods, the close proximity of two contemporaneous buildings makes a third house – lying less than 10 m from the southern end of House II where we found a hearth and workpit for stone tool production – rather unlikely. Obviously, we cannot entirely exclude the possibility of a new house built twenty years after the destruction of House II. However, it seems more likely that Features 13, 24, 25 and 26 represent workpits perhaps protected

by a screen acting as a wind-break or some sort of roofing in the yard of House II. These features can be better interpreted as an activity zone, part of the yard around the house, described as *"Haus und Hof"* by J. Lüning – in other words, the features of the house's yard that survived exactly because they were dug into the ground.[28]

It has already been mentioned above that Feature 28 cannot be associated with a specific period since it did not contain any finds. We interpreted the strongly burnt patch as the remains of a hearth. Since it lay higher than the other features, we cannot exclude the possibility that a few herdsmen of the Balaton–Lasinja culture had chosen to build a fire in the centre of House II.

Features 17, 18 and 32 must also be mentioned separately since they lay beyond the walls of the house. Feature 18 was a hearth near the western side of the house. The thick and hard red burnt firing plate lay under an ashy fill mixed with charcoal. Feature 17 was a rounded, shallow pit not far from the southwestern corner of the house. One side had a series of small, deep holes, perhaps for the feet of some sort of stand or a smaller bench. The rather uniform fill contained much charcoal and a high number of stone implements, as well as a few cores and a conspicuously high number of tiny chips and flakes. It would appear that this pit functioned as a stone workshop. E. Lenneis has already noted that workpits often lay near the southwestern corner of many early Linear Pottery houses.[29]

Feature 32 was one of the most unusual pits of the Pityerdomb settlement. It lay some 3 m east of the long pit (Feature 27) by the eastern wall of House II. The round posthole with a diameter of c. 27–30 cm did not contain any finds; its fill was fairly uniform: the loose clayey soil contained the occasional piece of charcoal and organic materials. Its flat floor lay at a depth of over 1 m. A small sherd lay on the floor of the posthole. The purpose of this posthole, lying by the eastern side of the house, remains enigmatic.

The features that can be associated with House II are the following: Feature 21 on the western side, Features 29 and 27 on the eastern side – these long, north-oriented pits outlined the long sides of the building – while Feature 22 probably indicated the southern end of the building. Due to the lack of adequate funding and the chronic shortage of time, we could not investigate the area to the north, a part of the settlement, that, on the testimony of the surface finds, was damaged by erosion. This was the reason that we decided not to investigate that area. It is possible that Feature 21 continued to the north and that there was another long, ditch-like pit north of Feature 27. The surface finds and the scanty scatter of burnt daub fragments nonetheless suggest that the length of the building was no more than 13–15 m, while its width was about 7 m, judging from the distance of 7.60 m between the pits outside the house.

Features 30, 31, 20 and 23 lay inside the house, although they did not always resemble the shallow depressions inside House I. Features 30 and 31 were shallow depressions, the latter continuing to the north where it was more like an unevenness in the occupation surface. Feature 23 was a small pit without any finds. Feature 20 was a carefully constructed hearth that was probably used for quite a long time. Its strongly burnt firing plate had a roughly 6–8 cm high raised rim and there was a large, deep ash pit in front of it.

House II and the associated features can be interpreted as follows. A series of long, north-oriented pits for clay extraction, spaced at 7.60 m from each other, were dug before the construction of the house. These indicate the width of the house that was roughly 7 m. These clay extraction

[28] *Lüning* (1997) 29, 37–40. For the symbolic connotations of the house entrance, cp. I. Hodder's imaginative hypothesis: *Hodder* (1990) 137. See also *Coudart* (1991) and *Coudart* (1998) 109–114, for similar arguments.

[29] E. g. beside House 2 of the Strögen site. *Lenneis* (1989) 33, and her kind personal communication.

pits later served as draining pits for rainwater and they also protected the house walls against rodents and other animals. Interestingly enough, a series of smaller posts set within a larger pit were also noted along a smaller section, similarly to House I. A small, narrow ditch with round, widening sections was observed in the middle of feature 27; there were smaller depressions in it at a depth of 110 cm, the deepest one lying at 127 cm. These can again be interpreted as having held posts that supported the roof section extending beyond the house wall (some 5–6 posts were set into Feature 27). Again, it was the northeastern side of the building that apparently needed additional support. This can perhaps be explained by the prevailing wind direction that caused more damage to the roof on this side, or that the rainwater damaged the roof and the walls to a greater extent. Alternately, the construction of a support for the eaves on the northeastern side may simply have been an architectural custom or tradition.

One major difference between the two houses was that we uncovered two hearths, one in the yard west of the house, the other near the southern entrance of the house. The latter was "open" towards the entrance, i.e. to the south: a raised, rounded rim encircled the heavily burnt firing plate, indicating a long use. The spark that set fire to the wooden furnishings, causing the destruction of the roof and the house, perhaps came from this hearth. A high number of charred wood fragments, perhaps the remains of the roof, lay in the lower layer of the burnt daub debris. One of the wood samples from Feature 20 was determined as cornel wood, suggesting its use for a smaller piece of furniture such as a bench, rather than as a roof beam (although it might also have been used as firewood). Oak and beech were also represented among the samples collected from the area around Feature 20; these may indeed have originated from the collapsed roof structure.

Feature 19, lying roughly in the middle of the house, had a rather peculiar form. It was unusual in that some parts were deeper than the other pits inside the house. This is especially true of the wider, rounded sections on its southeastern side where we noted an ashy, burnt patch under the occupation surface. The depth of the pit in this area was 109 cm. Since the occupation surface could be traced more or less continuously in Feature 19 at a depth of 55–60 cm, it seems possible that this pit had been dug before the construction of the house and had then been filled up. The deep pit in the middle of the house may have been dug for the post(s) supporting the purlin. While no such feature had been found in House I, a feature similar to the triple posthole of House I was not uncovered in House II. The stamped earth above the pit, the unusually rich assemblage of finds on the floor and the traces of intensive burning do not exclude the interpretation of Feature 19 as a posthole. Accepting this possibility means that evidence for some sort of roof structure was also uncovered in House II.

The larger, strongly burnt daub fragments allow the reconstruction of the wall structure. The wall had been smoothed both on its inner and outer side; the daub fragments also preserved the imprints of the wattling. The burnt debris of House I had fallen mostly on the eastern side; in House II, the thickest layer of burnt debris was uncovered in the middle of the building, covering Features 19 and 20. These two features were overlain by the thick, uniform debris to such an extent that when it was cleared, the two features at first appeared to be a single one.

The conflagration destroying the house was rapid and very intensive. The collapsing roof and the walls fell onto the vessels and the stone implements used by the occupants. Owing to the conflagration, the stamped greyish occupation surface – detected also in House I – was burnt over a rather extensive area in the middle of the house and could be traced over a 1.5 m^2 large patch between Features 20 and 21. The occupation surface (floor) lay at an average depth of 55 cm. The less well preserved sections of the occupation surface were outlined by the density of the finds on them; many of the vessels had apparently been crushed by the collapsing roof and walls. The 15–40 cm

thick mixed layer underlying the occupation surface hardly contained any finds. It seems likely that the pits had been filled up shortly after the construction of the house. Only the south-eastern widening part of Feature 19 yielded a few larger pottery fragments from the layer underlying the occupation surface; the importance of these finds is that traces of black painting, preserved by the damp soil, can be seen on some of them.

The characteristic features of the Pityerdomb houses

The daub fragments and the walls

The debris of both houses consisted predominantly of the burnt wall remains that had fallen on the internal furnishings. These daub fragments were usually amorphous pieces that had lost their original form during the conflagration, although in some cases – as for example on the pieces recovered from Features 9–12 beside House I and Features 19–20 beside House II – it could be observed that one side of these daub fragments had been smoothed and the other bore the imprint of twigs and wattling. These wall fragments were usually 4–5 cm thick and, judging from the preserved imprints, the twigs had a diameter of 1–1,5 cm on the average. Only in a few cases could we observe the imprint of the stem of some grass-like plant on the smoothed side. It is possible that the wall had been smoothed with a clump of grass or corn-stalks, although it is equally possible that they had been mixed into the clay. There is little evidence for the wall thickness since traces of the wall foundation did not survive on the inner side of the pits.[30] However, judging from the wattling and the 4–5 cm thick daub layer on both sides of the wattling, the wall thickness can hardly have been more than 10 cm, or 15 cm at the most. It would appear that they had a fairly light structure, leaving few traces in the soil.

A semicircular clay ridge was noted in the northern half of Feature 20; the upper part of this ridge was rounded. We did not find other thin, smoothed daub fragments in the area of the hearth. This would suggest that the hearth was open and did not have a plastered side except for this ridge or rim. Bearing this in mind, we interpreted all of the smoothed daub fragments as remains of the house walls.

Hearths

A total of four hearths were uncovered during the excavation of the settlement. The position of one of these hearths (Feature 28) indicates that it cannot have been coeval with the Neolithic settlement and that it can be assigned to the Balaton–Lasinja culture. It would appear that Feature 1, too, is later than House I, the implication being that no hearths associable with this building have survived. Two carefully constructed hearths with a burnt firing plate and an ashpit, apparently used over a longer period of time, were found during the excavation of House II, one inside the building (Feature 20) and one outside it (Feature 18) *(Figs 7a-c, 86, 97)*.

This is all the more remarkable since we know that open hearths lying in the open areas between the houses were the norm on the Early Neolithic settlements of South-East Europe and the early Linear Pottery settlements in Central Europe. In her discussion of the early Linear

[30] As for example at Brunn–Gebirge II, one of the closest parallels to the Pityerdomb settlement (cp. *Lenneis* (1995) 18; *Stadler* (1999)). Similar foundations were also observed near Balatonszárszó during the excavation of a late Linear Pottery settlement, part of the archaeological investigations preceding the construction of the M7 motorway: the walls of one of the houses uncovered at this site was marked out using thin stakes stuck into the ground in a slightly zig-zagging row. I would here like to thank Tibor Marton and Krisztián Oross for their kind oral communication.

Pottery house uncovered at Mold, E. Lenneis noted that cooking and baking were not indoor activities.[31] It would indeed appear that the earliest Linear Pottery houses of Central Europe did not contain hearths.[32] Open-air hearths have been reported from most Balkanic and Aegean Early Neolithic sites,[33] as well as from the Körös settlements in the Great Hungarian Plain,[34] the Bicske site of the Transdanubian Linear Pottery culture,[35] and the earliest Linear Pottery settlements in Austria, Germany and Moravia.[36] In contrast, very few of the currently known Early Neolithic houses contained hearths. These include the buildings uncovered at Pernik, Galabnik, Čavdar and Slatina, in which the hearths usually lay opposite the (assumed) entrance,[37] similarly to the houses at Pityerdomb. Intramural hearths have also been reported from Stara Zagora–Hospital, Karanovo and the Starčevo settlement at Divostin;[38] comparable houses containing hearths have been uncovered on a few Körös settlements in the Great Hungarian Plain, such as Tiszajenő, Szolnok–Szanda (House 5) and Hódmezővásárhely–Kotacpart.[39]

The most noteworthy parallels to the hearths of the Pityerdomb settlement are the Early Neolithic sites where hearths or ovens were found both inside and outside the houses. Buildings of this type have been excavated at Achilleion and Porodin.[40] The use of hearths offers a number of insights into Early Neolithic lifeways and customs, as well as into the climatic conditions of the period. The outdoor preparation of food is hardly surprising in the South-East European Neolithic, given that the warm climate in the region allowed various outdoor activities. Another aspect of this life-style is that houses were built on a closed or semi-closed groundplan (such as a U shaped one), with the outdoor activities carried out in a closed yard or court. Quoting I. Hodder's analysis, M. Özdoğan suggested that this shift can perhaps be explained by the need for storing foodstuffs, although he notes that the actual amount of food produced in the Neolithic did not necessarily justify this and that the appearance of closed yards should more likely be seen as a cultural process, rather than as the result of a technical development.[41] P. Halstead voiced a similar opinion and contrasted the public preparation of food with the private storage of various foodstuffs, the latter viewed as private property.[42] Food was stored inside the house on the Early Neolithic settlements of Greece, while food was prepared outdoors, in the open. P. Halstead also suggested that one reason for this practice may have been that smoke from outdoor cooking fires was no doubt visible from afar and perhaps emphasized the hospitable nature of this public activity.

The use of intramural hearths may have spread owing to climatic reasons, an assumption that seems justified in the case of sites such as Pityerdomb, lying in a sub-Alpine climatic zone. The use of an open hearth inside the house that obviously made various activities easier in harsher seasons and was also a source of heat and light, was no doubt often the cause of the building's

[31] *Lenneis* (1995) 18.

[32] *Meyer-Christian* (1976) 2.

[33] For example at Nea Nikomedeia, Achilleion IIa, Nea Makri, Servia, Koprivets, Porodin, Padea in the Danube Gorges and Suplacu de Barcău (Berettyószéplak), lying to its north. Cp. *Pyke* (1996) 43; *Winn–Shimabuku* (1989) 37; *Alram-Stern* (1996) 111; *Lichter* (1993) 43, *Grbić* (1960); *Ignat* (1998) 99–100; *Petrasch* (1984) 163.

[34] For example at the Endrőd 119 site. *Makkay* (1992).

[35] Makkay mentions three hearths beside the walls of the oval house, all three dug into the virgin soil. *Makkay* (1978); *Makkay–Starnini–Tulok* (1996) 11, Fig. 3.

[36] Neckenmarkt, Brunn/Gebirge II (P. Stadler uncovered nine hearths at this site), Mold, Mohelnice, Langweiler 8 and 16, and Eilsleben. *Lenneis* (1995); *Tichý* (1962) 302; *Stehli* (1994) 99; *Kaufmann* (1982); *Kaufmann* (1983).

[37] *Thissen* (2000a) 226; *Nikolov* (1989a); *Nikolov* (1992); *Nikolov* (1999).

[38] *Bailey* (2000) 48–49; *Hiller–Georgiev* (1984) 14; *Hiller–Nikolov* (1997) Fig. 2/8; Fig. 4/1, 4–14, 17; *Bogdanović* (1988) 36; *Lichter* (1993).

[39] *Raczky* (1976); *Kalicz–Raczky* (1980–81); *Horváth* (1989) 86.

[40] An open hearth was uncovered in layer IIb at Achilleion; layers IIa and IIIb of the same site yielded a house with an intramural hearth. *Winn–Shimabuku* (1989) 37, 41, 48; *Grbić* (1960); *Lichter* (1993).

[41] *Özdoğan* (1997) 10.

[42] *Halstead* (1999) 80.

destruction if a stray spark ignited the thatch roof and in this sense it was more of a potential source of danger than open-air hearths built at some distance from the houses. In the case of Pityerdomb we may only note that both House II, containing a hearth, and House I, in which no hearth remains were found, fell prey to fire.

The presence of ashpits containing a significant amount of ash is also noteworthy. It seems likely that the intramural hearths were only used for cooking, baking or for parching fruits and roasting cereals, as well as for heating. Pottery firing is the single other activity that can be assumed in the Neolithic, although it seems unlikely that this activity was conducted indoors since the high firing temperature necessary for this activity would have made indoor firing rather dangerous. Cooking, baking and parching can be performed using a simple firing plate that could be easily cleaned after the fire had died down. Baking, however, is not possible using a simple firing plate. J. Petrasch has pointed out that one had to take care that the food to be baked should not come into contact with the embers and the hot ash, while ensuring that the firing plate was hot.[43] This called for the digging of an ashpit in front of the hearth into which the embers could be scooped from the heated surface before flatbread or some similar food was placed on the firing plate. The ashpit of feature 20 indicates that the hearth was used not only for cooking, heating and giving light, but also for baking.

Hypothetical reconstruction of the Pityerdomb settlement and its houses

In view of the fact that the two houses of the Pityerdomb settlement could not be completely excavated and that out knowledge of their architectural elements is incomplete, we may only speak of the hypothetical reconstruction of these buildings. Some elements of the reconstruction are based on various traits of other early Linear Pottery houses. It must also be borne in mind that these 'borrowed' features should be treated as hypothetical elements in the case of Pityerdomb. Even so, the available evidence seems sufficient for a reconstruction of the settlement layout and the main architectural features of the houses.

Orientation

The siting and orientation of a settlement is generally based on two main considerations: climatic conditions (this being true of both larger regions and smaller, local areas) and cultural traditions. The houses on most early Linear Pottery settlements were strictly north to south oriented, Pityerdomb being no exception. Let us briefly review the possible factors influencing this orientation.

As regards the larger region, the prevailing wind direction was northwesterly, as in most parts of the Carpathian Basin. In the case of a north oriented house, only its narrower part would be exposed to the stormy winds. It has been suggested that slightly stronger westerly–northwesterly winds can be assumed in the 6th millennium BC.[44] The wind perhaps blew through the roof structure and cleared the smoke from the house;[45] the smoke from the hearth in the southern part of house II probably left through the roof structure or the southern entrance. It must also be borne in mind that forestation is highest in western Transdanubia and that the region was probably even more heavily forested in the Early Neolithic than it is today. It is my assumption that there was a wooded tract between the two houses, explaining the total lack of finds and settlement features between the two buildings, and a similarly wooded area can be assumed around House I. It is possible that the forest was cleared to some extent around the houses and that the area, constantly

[43] *Petrasch* (1984) 82–83.
[44] *Mattheußer* (1991) 35.
[45] *Coudart* (1998) 86–89 and *Fig. 102.*

trodden by domesticates, prevented the forest from encroaching on the settlement. E. Mattheußer localized the earliest Linear Pottery settlement among 40 m high trees in a densely forested area where the need for protection against the violent winds was hardly a consideration.[46] In other words, the strict northward orientation of the buildings could hardly have been motivated by practical considerations, such as the prevailing wind direction characterizing the broader region.

In view of the distance between the two houses at Pityerdomb, it seems rather unlikely that their siting and orientation was influenced by each other's position. The settlers chose the western slope of the roughly east–west ridge. The only practical reason for this choice appears to be the fact that the nearest source of water, the Szentgyörgy Stream, flowed by this side of the ridge. Since we did not find any wells during the investigation of the settlement, it seems likely that the occupants obtained their water from this stream. The practical reason for choosing the unfavourable northern side may have been the proximity of water. However, this can hardly be seen as a reason for the northern orientation of the houses in the case of a hilltop settlement. The practice of erecting houses perpendicular to the source of water has been observed on a number of settlements lying on river terraces, for example at the Kerkabarabás–Barabási háromszög site. The above would suggest that the northward orientation of these houses had been influenced by some cultural tradition, rather than climatic considerations or local conditions. It shall be shown below that this orientation is a characteristic feature of most contemporary Linear Pottery settlements.

The size of the houses

The size of the two houses, calculated from the area enclosed by the long clay extraction pits, was more or less similar: House I measured 8–8.5 m by 13–14 m, while House II was about 7 m by 14–15 m. On the basis of their size, these buildings can be assigned to medium sized "*Bauten*" or the small sized "*Kleinbauten*" in P. J. R. Modderman's typology of the buildings of the Central European Linear Pottery.[47] Their length corresponds more to his second category, while their groundplan has more in common with the houses of the third category since the "*Bau*" type usually has the central timber-framed section and a room with a bedding trench adjoining it to the north, while the "*Kleinbau*" type is characterized by a single room, most often without any postholes.[48] The closest parallels can be quoted from the Rosenburg, Strögen and Brunn/Gebrige–Wolfholz II sites in Lower Austria.[49] Good analogies to the longish clay extraction pits flanking the walls have been reported from Brunn II, as well as from Schwanfeld, Wang and Bruchenbrücken in Germany.[50]

In the light of the above, the houses uncovered at Pityerdomb correspond to the buildings of the earliest Linear Pottery horizon in Central Europe.

The construction of the houses

In addition to various studies, a number of monographs have also been devoted to the construction techniques of Neolithic houses, their structure and their use.[51] These were very useful for understanding the different construction phases of the Pityerdomb houses, even if many details remain unknown in the lack of direct architectural remains. After choosing the location, a series

[46] *Mattheußer* (1991) 39.
[47] *Modderman* (1972).
[48] Cp. *Lenneis* (1995) 16–17 ; *Lenneis* (1997)147; *Lenneis* (2000) 386.
[49] *Lenneis–Stadler–Windl* (1996); *Lenneis* (1995); *Stadler* (1999).
[50] *Lenneis* (1995); *Stadler* (1999); *Lüning–Modderman* (1982); *Lüning* (1984); *Lüning* (1987); *Stäuble* (1997) 5–66.
[51] *Elia* (1982); *Mattheußer* (1991); *Luley* (1992); *Lichter* (1993); *Stäuble* (1997); *Coudart* (1998).

of long, narrow pits were dug along the long walls of the house. The depth of these pits, or rather the volume of the clay gained from these pits, provides an indication of the size, thickness and massiveness of the walls, even assuming that a small portion of the clay was perhaps used for plastering the floor. As mentioned above, the 10–15 cm thick walls were made of wattling covered with clay both on their interior and exterior side. We have no idea of how high the walls actually were. Several reconstructions of the Linear Pottery longhouses of Central Europe have been made, both on paper and as part of experimental archaeology projects; the best known among these is the house in the archaeological park at Asparn/Zaya (Lower Austria) and the reconstruction of one of the houses uncovered at Schwanfeld in Bavaria.[52] These reconstructions typically have the heavy roof resting on barely 1 m high walls. The almost complete absence of posthole at the Pityerdomb site perhaps indicates that the roofing of these buildings did not resemble the sophisticated structure of the early Linear Pottery houses uncovered on Austrian and German sites. In this case, the walls may have been slightly higher.

The most uncertain element as regards the Pityerdomb houses is the reconstruction of the roof structure. The Linear Pottery houses of Central Europe all had a gable roof resting on heavy timbers aligned into three or, more often, five rows. The occupants of these houses lived in a dense forest of posts and even the concept of internal space acquires a new meaning since a space carved up to such an extent was more suited to storage than to a communal living space. At Pityerdomb, however, only one triple posthole ("*Querjoch*") was found at the southern end of House I (Feature 4) and it is possible that the 84 cm deep round intrusion in feature 3 was also a posthole. The deep intrusion in Feature 19 in the middle of House II may have been dug for the posts supporting the purlin (no such feature was uncovered in the other house). We also uncovered a posthole east of House II (Feature 32), but it seems likely that this thick timber, set in a very deep posthole, was not an architectural element. What kind of roof should we conceptualize? H. Luley and A. Coudart have proposed a number of reconstructions with cross-beams,[53] but it is uncertain how a gable roof could have been constructed without a row of at least three upright posts. Of the twenty-one house remains uncovered at an early Linear Pottery settlement near Frankfurt-am-Main, only six had associated postholes.[54] A. Hampel noted that the lack of postholes can hardly be attributed to erosion, but should rather be seen as "eine größere Variationsbreite während der ältesten LBK".[55]

House I of the Pityerdomb site can be assigned to Lichter's type A IIa,[56] a building that was widespread in Transdanubia and to its northwest during the Neolithic, and in this sense it can be fitted into his categorization.[57] However, an accurate and reliable reconstruction of Linear Pottery houses without rows of timbers has not been presented to date. There must at least have been a row of central posts for supporting the roof. Although C. Lichter mentions roof types that were supported merely by the walls, he does not quote a single scrap of evidence for the existence of this type from the Neolithic. He mentions W. Meier-Arendt's opinion, according to whom this roof type could hardly have existed before the early Middle Ages since the timbers of this type could not have been mortised.[58] This view is also challenged by some prehistorians. In his sceptic overview of this issue, Lichter admitted that the only reason for his suggestion of a self-supporting gable roof in the Neolithic was that there was no other apparent explanation for the lack of internal postholes. H. Luley and A. Coudart did not devote much attention to this contradiction.

[52] *Lüning–Modderman* (1982).
[53] *Luley* (1992) 65, 84; *Coudart* (1998) 64.
[54] *Bernhardt–Hampel* (1992); *Hampel* (1992) 128.
[55] *Hampel* (1992) 127.
[56] *Lichter* (1993) 51.
[57] *Lichter* (1993) 60, Fig. 10.
[58] *Lichter* (1993) 63, with an overview of the debate and further references.

It must here be noted that flat roofs for which internal supporting posts were unnecessary, resembling the ones in South-East Europe, would have been most impractical in the wet, Alpine climate of Transdanubia. This climate brought long rainy spells in summer and heavy snow in winter. Buildings are only protected against damage caused by water if the roof is pitched at an angle of at least 30–40 degrees according to H. Luley's calculations.[59] A roof of this type usually extends beyond the house walls in order to protect the wattle and daub walls. In the case of House I, the small, obliquely dug postholes, interpreted as supports for the eaves, suggest a roof strongly extending beyond the walls. Since a number of relatively well-preserved Neolithic houses have been uncovered in which the postholes of a timber structure have not been found, it is to be hoped that future excavations will bring to light finds and carefully excavated features that will provide an explanation for the roof structure of buildings resembling the ones at Pityerdomb.

We do have evidence for the wood used for the roof timbers. The analysis of the radiocarbon samples sent to Vienna revealed that ten samples represented oak, eight samples were beech, two samples were from cornel wood and one sample was determined as elm.[60] The frequency of beech is also important for the environmental reconstruction and shall be discussed separately. What is noteworthy in this context is that both oak and beech were used for the construction of the house since they occur in roughly the same proportion inside the house.

Both species were excellent building timbers. H. Luley has pointed out that oak, a hard and durable species that is particularly well suited for use as building timber, occurred in the environment of all Central European Neolithic settlements.[61] This distinguishes it from beech, a similarly good building timber, that is less available and thrives on higher plateaus with a cooler micro-climate. Beech cleaves easily, this being the reason that it is excellent for cutting into planks according to Luley. In the 6th Millennium BC, the Pityerdomb site apparently lay within the beech boundary,[62] meaning that this species was present in the cool hilly region adjoining to the eastern Alpine foreland. The high proportion and joint occurrence of oak and beech in the charcoal samples suggest that both came from the burnt, collapsed roof structure. This in turn offers some indirect archaeological evidence for the roof structure of the houses uncovered at Pityerdomb.

It has already been mentioned above that in the case of House II we may assume that its entrance lay on the narrower, southern side since this would be logical in view of the southern features – interpreted as outbuildings – and Feature 17, most likely a workshop, lying near the southwestern corner of the house. Stepping out of the house, the occupants entered a yard with the workshops, the setting of various outdoor activities and the area where perhaps pens and stalls for the animals had also been built.

The floor of the house was of stamped clay. It proved impossible to determine the fabric of the greyish, granular occupation surface – we did not receive any analytical results for the samples we collected. We can therefore only rely on the observations made during the excavations: the tiny bone fragments in the stamped clay may have been the remains of household refuse destroyed by the acidic clay, although their fairly even distribution suggests that these bone fragments had been mixed into the clay in order to prevent muddying. The practice of 'tempering' the floor is also mentioned by H. Luley, according to whom not only bone, but tiny pebbles were also mixed and trodden into Neolithic house floors.[63]

[59] *Luley* (1992) 62–63.

[60] I would here like to thank Angela Carneiro (Vienna) who performed the analyses.

[61] *Luley* (1992) 27–29.

[62] Acidophil beech is an important species of the so-called southern Dealpine Boreal climatic zone in the Alpine foreland. *Kárpáti* (1960); *Soó et al.* (1969).

[63] *Luley* (1992) 25.

We know next to nothing about the internal furnishings. Two of the charcoal samples from near the hearth were identified as cornel wood and probably represent the last bundle of brushwood. Another sample was determined as elm; this was also found in House II, in Feature 19 north of the hearth and perhaps came from a wooden bench or a table. The interior of both houses was rather spacious. Smaller depressions, perhaps used for setting storage vessels for liquids or foodstuff inside them to prevent them from tumbling over, were noted around the hearth in both houses.

The Pityerdomb settlement after the destruction of the houses (the taphonomic evidence)

The archaeological record reveals that the occupants of the early Linear Pottery settlement at Pityerdomb abandoned the settlement after their houses had burnt down and their possessions had perished. It seems likely that they built their new houses a few kilometres away, perhaps at the Szentgyörgyvölgy–Haraszti erdő site or on the outskirts of Ramocsa, where we identified similar settlement features. The Pityerdomb site was briefly occupied during the classical Linear Pottery period (Keszthely phase), as shown by the scanty archaeological finds (a few pottery sherds in a secondary position). This brief occupation occurred some 80–120 years later and, as has been mentioned above, it is uncertain whether the choice of location was accidental or whether the settlers had retained some memory of the one-time hamlet.

The hill remained unoccupied during the later centuries of the Neolithic and the Early Copper Age. A few sherds (and perhaps two hearths) found on the contemporary surface and in the upper mixed humus layer the indicate that a group of the Middle Copper Age Balaton–Lasinja group settled here briefly. This settlement was hardly mere chance since smaller campsites of the culture have been identified on almost every ridge along the Szentgyörgyvölgy Stream and in its broader environment. The next settlement was identified a few hundred meters away, on the hill on which the Catholic church was built. The Pityerdomb remained uninhabited from the late 4th Millennium BC until the Middle Ages, when a medieval hamlet with pottery workshops was founded. The pottery fragments from these workshops have been found scattered over the site – however, in the light of the other known medieval antecedents of Szentgyörgyvölgy, these finds are rather insignificant.

The taphonomy of the Pityerdomb site thus indicates that the bad state of preservation of the settlement features can be attributed to the frequent rains and the acidic soil, rather than to destruction caused by later occupations or ploughing that was in any case shallow and not too intensive.

Chapter 3

THE ORIGINS OF THE LINEAR POTTERY HOUSE

Introduction

It is clear from the above that the different features of the two buildings uncovered at Pityerdomb link these buildings to the Linear Pottery houses of Central Europe. These two houses can be considered the earliest such remains from Transdanubia.[1] We may say that together with the houses uncovered at Brunn-Wolfholz–Gebirge II and the early buildings at Mohelnice, they represent the first Neolithic houses in this part of Central Europe. In contrast to the pottery that can only tentatively be assigned to the Linear Pottery owing to the many Starčevo features, it would appear that the houses appeared in their fully developed form at Pityerdomb and spread to a distance of over 700 km within a few years. These house types essentially determined the architectural tradition of Central Europe. An overview of possible forerunners is therefore most instructive and can be of help in defining the place and date of the emergence of Linear Pottery house types. In view of the fact that the only tangible evidence for the earliest Neolithic houses in Transdanubia comes from the Pityerdomb site, a discussion of the problem of early Linear Pottery houses in relation to this site seems in order.

Two traditions can be reviewed in this respect: the emergence of Aegean–Balkanic Early Neolithic house types and possible Mesolithic buildings. Several monographs have been written about the early architecture of South-East Europe.[2] In this section I shall only discuss those buildings that are relevant to this issue.

The earliest buildings

Although it may seem a little far-fetched to begin the search for the origins of Linear Pottery longhouses with the pre-pottery Neolithic of the Near East, I shall nonetheless briefly review the buildings of the earliest sedentary (or semi-sedentary) communities. The reason for this is two-fold. Firstly, our knowledge of the beginning of sedentism in the Fertile Crescent, the possible interrelation between the earliest buildings and the emergence of a sedentary life-style, as well as of the social organization of these communities has increased considerably. A number of more recently excavated sites in southeast Turkey, most of them investigated by German prehistorians, has set the emergence of the Neolithic and the associated social changes, as well as the developments in early architecture in an entirely new perspective. Secondly, a number of similarities can be noted between the architecture and the house forms of the Near East and Anatolia, the Balkans and Central Europe in the period directly preceding the appearance of farming communities, and the same holds true for the period following the appearance of food-

[1] According to Katalin T. Bíró's kind personal communication, two postholes were uncovered during the excavations at Vörs–Máriaasszonysziget in 2000. Since, however, these postholes could not be associated with any house remains and since Croatian prehistorians working on Starčevo sites often mention pits surrounded by postholes ("pit-dwellings"), it seems likely that the postholes uncovered at the Vörs site were not part of a house and their presence in itself does not constitute enough proof for assuming a house.

[2] *Elia* (1982); *Lichter* (1993); *Bailey* (2000); *Thissen* (2000a); *Thissen* (2000b).

producing economies. Although it is possible that these similarities are simply mere chance, they should nonetheless be briefly mentioned.

The earliest aceramic Neolithic communities in the Near East constructed circular or oval stone houses.[3] O. Bar-Yosef has noted that the small, round houses with a diameter of 4–8 m, often provided with some sort of roofing, from the Natufian can be regarded as reflecting the slow process leading to sedentism since these campsites gradually evolved into permanent settlements among the hunter-gatherer communities.[4] It has been argued that one of the main reasons for the shift to sedentism was the crisis caused by climatic changes,[5] while the change in house forms was more of a consequence.[6] The round houses of the preceding PPNA phase became rectangular in the PPNB phase, although rectangular houses already appear during the PPNA at Beidha.[7] The early villages investigated at Mureybet and Jerf el Ahmar, as well as a few sites on the Syro-Levantine coast indicate that the Levant can be regarded as the cradle of sedentism and the area where of rectangular buildings first appeared.[8]

The discovery and investigation of early PPNA sites along the upper reaches of the Urfa and the Euphrates led to a re-assessment of eastern Anatolian sites, such as Çayönü. The occupants of the round houses at Hallan Çemi Tepe used stone vessels, and raw material for the manufacture of stone artefacts was acquired from a source lying some 100 km away.[9] According to the excavator of the site, the cultural remains can be dated to the 11th Millennium BP. The major discovery challenging the theory of the Levantine cradle of civilization came to light at Nevali Çori, a site lying near Lidar Höyük; another startling discovery was made at Göbekli Tepe, where an artificial mound from the PPNB concealed a series of monumental megalithic buildings, most probably sanctuaries, from the Epipalaeolithic.[10] The round structures were not residential buildings since these hunter-gatherer communities had not adopted a sedentary lifeway – it seems more likely that this unique megalithic centre reflected the regular contact and, according to the excavator, the jointly performed rituals in the probable centre of Neolithic origins, lying in the Hanliurfa area.[11] The earlier oval and round buildings were replaced with rectangular structures during the PPNB. The later layers of Göbekli Tepe were coeval with the earlier phase at Nevali Çori; rectangular buildings made their appearance during the PPNB along the Euphrates. In addition to terazzo floors, house foundations constructed of stones – "grill buildings" – were also quite widespread.[12] The *"triangle d'or"* region – the Taurus Range, the upper reaches of the Euphrates and the Tigris, as well as the Upper Khabur region – played an important role in the shift to sedentism and farming, as well as in the development of early architecture. Many prehistorians now regard this region the genuine or at least as an important cradle of civilization as the one in the Levant.[13] In addition to Çayönü, Nevali Çori and Göbekli Tepe, a number of other sites with megalithic structures from the period preceding the Neolithic and dated to the 10th–9th Millennia BC have been identified in the course of field surveys.[14] According to the prehistorians working in the

[3] *Flannery* (1971); *Saidel* (1993).
[4] *Bar-Yosef* (1984) 258–267.
[5] *Bar-Yoseph–Belfer-Cohen* (1989) 457, 489–490; *Tschernov* (1995) 60–67.
[6] *Bender* (1975) 135–137.
[7] *Bender* (1975) 135.
[8] *Stordeur–Brenet–Aprahamian–Roux* (2000).
[9] *Rosenberg–Davies* (1992); *Rosenberg* (1999).
[10] *Hauptmann* (1993); *Hauptmann* (1999); *Schmidt* (2000).
[11] *Schmidt* (2000) 49.
[12] *A. Özdoğan* (1999).
[13] *Kozłowski* (1999), distinguishes three major typological and regional types among the chipped stone implements from the Fertile Crescent: the Trialetian in the north, the Khiamian in the Levant and the Nemrikian in the east. However, these three types occur together in the Urfa region, in the new "golden triangle" of Neolithic civilization. Cp. also *Cauvain–Aurenche–Cauvain–Balkan-Atli* (1999) 100–101; *Kozłowski* (2002).
[14] Kind personal communication of Harald Hauptmann and Klaus Schmidt. I would here like to thank them for sharing this information with me.

area, the discovery of similar centres can be expected on the southern Pontic coast, now that they know what they are looking for. A permanent tell settlement with rectangular wattle-and-daub buildings characterizing the earliest Neolithic has already been found a little to the north at Cafer Höyük near Malatya.[15] However, one of the problems that still needs to be resolved is how the architecture of the PPN communities in southeast Anatolia developed until the agglomerated rectangular houses, such as the ones found at Çatal Hüyük,[16] became the norm.

Another difficulty is that no PPN settlements have yet been found north of the Konya plain and the Menderez (Meander) and Gediz (Hermos) Valleys, on the Anatolian coast and in northwest Turkey.[17] The Epigravettien (Agaçli type[18]) chipped stone industry of the Marmara region was related to similar industries of the northern Pontic, rather than to the elaborate industry based on obsidian acquired through the long-distance trade of southern Anatolia.[19] The lithics from the Fikirtepe type coastal settlements show many northern features and the Çalca type aceramic Neolithic tradition resembles the stone industries of the later, pottery phases. M. Özdoğan has noted that there is a definite break between the central Anatolian tradition and the earliest Neolithic traditions of the Marmara region, indicating relations with the Balkans, and of Turkish Thrace.[20]

A similar, dual tradition can be assumed in the development of rectangular houses. The first rectangular, wattle-and-daub houses with raised walls appeared in the Marmara region at the close of the 7th Millennium BC. A house foundation measuring 5 m by 6 m was uncovered in layer X at Ilipinar; in the succeeding phase (Layer IX), a posthole for a rather thick timber and the traces of the posts supporting the purlin were observed in the middle of the house.[21] This house type appeared in the western Marmara region at roughly the same time: the rectangular patch filled with stone tools found at Karlidere–Çalca was interpreted as a building of this type.[22] It must also be borne in mind that another tradition, regarded as a "Palaeolithic survival" by M. Özdoğan, can also be demonstrated on the Early Neolithic sites in the Marmara region. The huts reconstructed from the debris of burnt daub fragments at Fikirtepe were oval structures.[23] A "Palaeolithic survival" makes no sense without a Mesolithic and it seems likely that M. Özdoğan had in mind a period preceding the Neolithic.

Possible Mesolithic antecedents

The Mesolithic was for a long time a rather neglected field of archaeological studies;[24] there are still some regions where there is a 'ban' on assuming a Mesolithic between the Palaeolithic and the Neolithic.[25] Another difficulty in the research of the Mesolithic is that the settlements from this period usually lay on sea coasts and river or lake shores, exposed to destruction by fluctuations in the water level.[26] Other settlement traces may have been destroyed by early farming communities since these settlements rarely had sunken features.

[15] *Démoule* (1993) 3; *Cauvain–Aurenche–Balkan-Atli* (1999).

[16] *Mellaart* (1962); *idem* (1963); *idem* (1964); *idem* (1966); *idem* (1975); *Yakar* (1991); *Hodder* (1996); *idem* (1999).

[17] *Yakar* (1991) 177–178 and map XI.

[18] *Gatsov* (1996) 174.

[19] *Özdoğan* (1999) 201–212; *Schmidt* (2000) 51; *Balkan-Atli et al.* (1999). Cp. also the section on the diffusion of the Neolithic (Chapter 10).

[20] *Özdoğan* (1997); *idem* (1999) 210–216.

[21] *Roodenberg* (1993) 253; *idem* (2000); *Bailey* (2000) 72.

[22] *Özdoğan* (1996); *idem* (2000); *Özdoğan–Gatsov* (1998) 214.

[23] *Özdoğan* (1997) 23–24.

[24] *Tringham* (1973) 551–552; *Zvelebil* (1986) 5.

[25] As was the case, for example, in the former Soviet Union and is still the 'official' standpoint in China. Cp. *Zhao* (1998); *Feng* (2000).

[26] Cp. the studies in the volume A. Fischer (ed.): Man and Sea in the Mesolithic, Oxford 1995, as well as the investigations on the Pontic "Flood" and the proliferation of articles on this subject: *Ryan–Pitman et al.* (1997); *Tringham* (2000); *Jablonka* (2002).

It is nonetheless noteworthy that while Mesolithic traces have been found throughout Europe – both in coastal and inland regions – hardly any buildings are known from this period. The number of Mesolithic sites decreased drastically in the late phase. D. T. Price has argued that Mesolithic communities only settled in places with water sources.[27] Others have pointed out that the warmer and wetter climate favoured forestation over the greater part of Europe[28] and that the thick canopy of these dark woods, the sparse undergrowth and the minimal biomass did not allow a denser settlement, even if demographic estimates indicate that this was a definite possibility.[29] These two hypotheses do not contradict each other: the forested regions usually extend up to marine, riverine and lacustrine environments that usually receive more sunshine, while more upland regions have a slightly different environment. In the Alps, for example, there are better communication routes in the open, well visible terrain than in the densely forested, marshy valleys. The finds from the Ullafelsen site, lying in the Tyroelan Alps well beyond the forest boundary, reflected a lively long-distance trade in lithic raw materials.[30]

Most Mesolithic settlement sites can barely be detected owing to their small size and transient nature. The round hut with the hearth excavated at Remouchamp in Belgium and the oval houses uncovered in southern Sweden can be regarded as exceptional cases of archaeological luck.[31] A stamped floor was observed in the northern part of the Henauhof II site, lying in a marshland area in southern Germany.[32] Hunter-gatherer communities were constantly on the move in order to provide for themselves: they followed migrating herds, watched out for seasonally appearing fish shoals and gathered the berries, fruits and nuts ripening in differing seasons and areas. It seems likely that they periodically returned to their campsites, as shown, for example, by the stratigraphy and the analysis of the pollen and organic remains from Kemnath (Oberpfalz) in Germany that revealed frequent, but brief anthropogenic impacts.[33] The mobile life-style of these communities called for the creation of different types of seasonal campsites. More or less identical settlements reflect a continuous migration, while campsites established with a view to storing food evolved into more permanent base camps. In describing these two models, G. Bailey noted that the first type meant campsites occupied during different seasons, while the second type was created near food resources lying at greater distances from each other. He drew a distinction between residential mobility and logistic mobility.[34] P. Rowley-Conwy and M. Zvelebil expanded this model into a system with four phases. Their first phase had seasonal camps corresponding to regular migrations, with mobile groups creating small food storage bases at different campsites. This phase was followed by one with a larger base camp from which the smaller food storage bases could be reached more easily, as well as with smaller seasonal camps. The third phase was characterized by a bipolarity, with two base camps (probably a summer and a winter one) and a chain of smaller hunters' camps around them, reflecting a by-and-large sedentary life-style. The fourth phase was marked by the emergence of permanent campsites whose occupants conducted forays in different directions.[35] This last phase more-or-less corresponds to A. Whittle's 'radiating mobility' with the assumption of a permanent base camp. According to Whittle, this may have been the case in the Early Neolithic of the Carpathian Basin.[36] However, none of the Mesolithic settlement types in the temperate climatic zone called for features dug deep into the ground, this being the reason that the slightly sunken habitations of the

[27] *Price* (1999) 189. Settlements of this type have been identified in Holland, Belgium and Denmark. They include the Ringkloster site, a seasonal autumn-winter campsite in Denmark, and the more permanent settlements in Holland. *idem* (1985); *idem* (1987).

[28] *Waterbolk* (1971); *idem* (1982).

[29] *Meiklejohn* (1978).

[30] *Schäfer* (1999).

[31] *Price* (1987); *Larsson* (1990b).

[32] *Kind* (1992).

[33] *Tillmann* (1993a) 31–33.

[34] *Bailey* (1983) 60–61.

[35] *Rowley-Conwy–Zvelebil* (1989) 48–50.

[36] *Whittle* (1996) 29, 153, 160.

Mesolithic only survive under extremely favourable conditions.[37] The organic debris is usually recovered from the surface and it is often this debris and the scatter of artefacts, or a dark discolouration in the sterile sand, that indicate the presence and form of the house.[38] These observations reflect the difficulties in the discovery of Mesolithic settlements and, also, the difficulties in identifying Mesolithic settlement features that are only indicated by stone tools and the occasional hearth.[39] We know that deep pits were usually dug for house construction and were only secondarily used as refuse pits. The lack of clay extraction pits suggests that there were no buildings with raised and daubed walls.[40] It is possible that smaller, more briefly occupied campsites or more permanent base camps will be identified on the western shores of Lake Balaton and among the Zala Hills during future surveys.[41]

Let us begin our overview from the south. There are many archaeological indications that Mesolithic man negotiated the sea between the Mediterranean islands, as shown not only by the widespread use of Melian obsidian,[42] but also by the evidence for pre-Neolithic animal husbandry from Corsica.[43] A number of Mesolithic sites have been identified in Thessaly.[44] The southernmost houses are known from M. Özdoğan's excavations; he considered the northern Marmara region as one possible route of the diffusion of the Neolithic to European and assumed also the blending of the indigenous population with the newcomers.[45] V. Nikolov, T. Stefanova and I. Gatsov argued for a similar development in the Early Neolithic of Turkish and Bulgarian Thrace, as well as along the southern and western Pontic littoral.[46]

The Mesolithic settlements in the Danube Gorges and the Lower Danube region can be divided into several groups, and it has also been suggested that some of them survived into the early Vinča period.[47] The three hypothetical regional groups share a similar architectural tradition: the settlements at Padina, Vlasac and Lepenski Vir on the upper reaches, the sites in the Kula and Ostrovul Mare area along the middle reaches and the Hajdučka Vodenica, Icoana, Ostrovul Banului, Schela Cladovei and Ostrovul Corbului sites in the Lower Danube area were all characterized by sunken or above ground, oval and trapezodial structures, built by partly sedentary communities.[48] I. Radovanović has made an interesting observation as regards the differences between the lifeways of the hunter-fisher-gatherer communities along the Lower Danube and the ones in the Central Balkans, namely that the long life of the Mesolithic communities in the Danube Gorges, surviving until the close of the Early Neolithic, can hardly be dissociated from the fact that these communities, engaged in fishing, lived on permanent settlements and were more or less sedentary.[49] According to D. Harris, this incomplete or semi-sedentary life-style marked the first step towards a subsistence based on food production and the emergence of a ranked society.[50] R. Tringham and B. Voytek

[37] Such a slightly sunken structure surrounded by thin stakes has been reported from the Retlager Quellen site. *Luley* (1992) 189; *Kertész* (1996) 21, with the caveat that the original depth is uncertain owing to erosion. However, the reconstructions of these dwellings suggest that they were not genuine sunken buildings, but rather tents damp-proofed with earth around the base.

[38] The buildings uncovered at Sarching, Oerlinghausen and Retlager Quellen in Germany. *Luley* (1992) 6, 147, 150.

[39] At Siebenlinden in southern Germany, C.-J. Kind identified the late Mesolithic houses on the basis of the hearths. Cp. *Kind* (2001).

[40] For a detailed analysis on the possible functions of pits, cp. *Elia* (1982) 137–138.

[41] *Bailey* (1999) 156–157, 160, argued that pit dwellings represent the architecture of mobile communities with temporary campsites and contrasted them with the above-ground houses of permanent settlements.

[42] *Cherry* (1981); *idem* (1990); *Runnels–van Andel* (1987); *Runnels* (2001); *Perlès* (1990).

[43] *Vigne–Desse-Berset* (1995); *Budja* (1999).

[44] *Kyparissi-Apostolika* (1998a) and (1998b); *idem* (2000).

[45] *Özdoğan* (1996); *idem* (1997) 23–24.

[46] *Nikolov* (1998); *Stefanova* (1998); *Gatsov* (1995): 74–75.

[47] *Radovanović* (1996) 39.

[48] *Radovanović* (1996) 41; *idem* (1992–93): 95–97; *Jovanović* (1987); *Boroneanț* (1970).

[49] *Radovanović* (1996) 43; *idem* (2000).

[50] *Harris* (1977).

argued that there was a diversity of more or less permanent settlements in the Danube Gorges and that the process leading to sedentism was by no means irreversible. They believe that the greater security provided by food caches led these communities to create permanent settlements.[51]

More to the west, the Central and Northern Balkans were controlled by mobile communities whose shift to a food producing economy was a more rapid process, perhaps in consequence of their far-ranging contacts and their mobile lifeway.[52] A possible explanation for the 'long' Mesolithic in the Danube Gorges is that the shift to more toilsome crop cultivation was simply not worth the time for these communities, living in a region with a broad spectrum of excellent food resources.[53] J. K. Kozłowski too argued for the different development of the two regions when assuming exclusively southern influences in the case of the Fiera Cleanov site.[54] Whatever the reason, the fact remains that the divergences in the cultural tradition east of the Central and Northern Balkans is reflected not only in the differences in house construction. Based on more or less similar considerations, D. Srejović distinguished two distinct regions in Serbia at the close of the Mesolithic.[55]

Together with Bačka Palanka (Palánka) near Novi Sad (Újvidék) and Hajdukovo (Hajdújárás) near Subotica (Szabadka), J. K. Kozłowski regards the Hungarian Mesolithic sites the continuation of the northern Tardigravettien tradition, predominantly on the basis of the lithic assemblages, since with the exception of Sződliget, no buildings have been uncovered on any of the currently known sites.[56] The evidence for meat storage found at the Ságvár and Pilismarót–Pálrét sites suggests that one was a central, the other a satellite campsite.[57] It is especially regrettable that no settlement features were uncovered at Kaposhomok[58] and Szekszárd–Palánk,[59] the two sites regarded as representing the late phase of the Mesolithic. Neither were house remains found on the sites in the Győr area,[60] on the Mesolithic sites south of Lake Balaton,[61] or on the sites in the Vázsony Basin in the Balaton Uplands.[62] The publication of possible house remains from Hurbanovo (Ógyalla) near Nyitra (Nitra, Slovakia) would be vital since this site has also been assigned to the latest Mesolithic horizon.[63]

The tenting place uncovered at Sződliget was slightly oval and had both an intra- and an extramural hearth.[64] The 19 m^2 large hut uncovered by R. Kertész at Jásztelek I had a similar groundplan and a storage pit filled with shells lay beside it.[65]

The Early Neolithic Linear Pottery house definitely evolved somewhere south of the upper reaches of the Danube and was brought to Austria, Moravia, Bohemia, Poland and Germany in its fully developed form by the earliest Linear Pottery groups. In this sense, the Mesolithic architecture of Central Europe is not particularly relevant to this issue.[66] The reason that I have mentioned a few sites is that similarly to the pre-Neolithic architecture of the Near East, these buildings too are remarkably uniform, with exclusively round or oval buildings. The other reason for the brief review

[51] *Voytek–Tringham* (1989) 495–496.

[52] *Tringham* (1973) 562.

[53] This issue will be discussed at greater length in the section on neolithization (Chapter 10). *Bonsall et al.* (1997), *eadem* (2000), *Rozoy* (1996) 19.

[54] *Kozłowski* (1973) 323.

[55] He also hypothesized a third region in Montenegro. *Srejović* (1989) 481, 490.

[56] *Brukner* (1966); *Kozłowski* (1973) 320–322.

[57] *Vörös* (1982); *Logan* (2000) 191–192.

[58] *Pusztai* (1957); *Bánffy* (2000a). In contrast, *Gläser* (1994) 471, considers the assemblage from Kaposhomok as dating to the earlier Mesolithic.

[59] *Bácskay–Simán* (1987) 128–129.

[60] *Gallus–Mithay* (1942).

[61] *Pusztai* (1957).

[62] *Mészáros* (1948), *T. Dobosi* (1972).

[63] *Kozłowski* (1973) 321.

[64] *Gábori* (1968); MRT 9, site 31/9.

[65] *Kertész* (1996) 5–9.

[66] In A. Whittle's opinion the early Linear Pottery buildings of Central Europe adopted certain Mesolithic elements, at least in the regions characterized by pottery in the Limbourg and La Hoguette style, although he does not elaborate this point. *Whittle* (1996) 152.

of these sites was that the trade and cultural contacts of the Transdanubian Mesolithic spanned impressive distances, the implication being that even though Mesolithic buildings are lacking from the archaeological record, the contact with distant regions reflected in the archaeological finds suggest that the architecture of this region followed the Central European tradition.

H. Luley began his overview of the architecture with the buildings of the Upper Palaeolithic. The structures uncovered on open settlements were exclusively round or horseshoe shaped.[67] Small campsites, with a diameter of no more than 20 m and oval buildings with a diameter of roughly 6 m were found on Mesolithic sites assigned to the Grebenikian industry between the Carpathians and the Dniester.[68] Oval houses were also uncovered at the Mesolithic sites of Retlager Quellen and Oerlingenhausen in the Northern Rhine-Westphalia province.[69] The building from the latter site measured 5.8 m by 5 m and can be regarded as the closest parallel to the Jásztelek I hut.[70] It must here be noted that the dark, oval patch marking the house in the sterile sand was traversed by a northwest–southeast row of posts and that the hearth inside the house was similarly north–south oriented. Sarching in Bavaria, sited on a sand dune on a terrace of the Danube, lies closer to Transdanubia geographically. The importance of this site lies in the fact that a row of north to south postholes were found in the round house,[71] together with two hearths, one inside, the other outside the building. M. Heinen mentions two early Mesolithic sites slightly south of the Danube in Bavaria, dated to the 7th Millennium BC.[72] Two oval buildings could be reconstructed from the scatter of the surface finds on one of the sites.

At the close of this period, the Mesolithic landscape was dotted with logistic hunters' camps[73] and a rich diversity of settlement sites, populated by small communities of no more than thirty individuals who tended to settle by larger lakes and rivers.[74]

The number of Mesolithic sites increases northwards of the Carpathians.[75] At the same time, the region appears to have been practically uninhabited during the period immediately preceding the Neolithic: only a fraction of the Mesolithic sites on the Alpine slopes in southern Germany and the Upper Danube valley can be assigned to the late Mesolithic. M. A. Jochim argued that the conspicuous decline of Mesolithic sites can probably be attributed to the spread of dense woodlands and the sparse undergrowth under the dense forest canopy as a result of the warmer and wetter climate since hunting and gathering was rather difficult under these conditions.[76] He assumed the presence of base camps in areas where the seasonal food resources and the amount of food could be reasonably predicted, such as Lautereck and Henauhof, as well as the Jaegerhaus Cave.[77] To which we may add that the presence of late Mesolithic communities can also be hypothesized in areas that acted as contact zones with the earliest farming communities and where various commodities could be exchanged for food. It is my belief that the Balaton Upland and the western shores of Lake Balaton was one of these areas.

[67] Such as the house uncovered at Gönnersdorf from the Magdalénien. *Luley* (1992) 6.

[68] *J. K. Kozłowski–St. K. Kozłowski* (1986) 100–101.

[69] *Luley* (1992) 6, 147.

[70] *Kertész* (1996) 21–23.

[71] *Luley* (1992) 6, 150.

[72] *Heinen* (1990) 28–29.

[73] *Jochim* (1998) 214.

[74] *Gronenborn* (1999) 130.

[75] *J. K. Kozłowski–St. K. Kozłowski* (1986) 100–101. Their explanation, namely that the river system was more dense in the north, seems implausible to me. K. Kosse's study (*Kosse* [1979]) and the studies conducted by Pál Sümegi and his colleagues (*Kertész et al.* [1994]) have shown that there was a dense meander system in the Great Hungarian Plain, and the same holds true for western Transdanubia, where the valleys among the hills are without exception criss-crossed by rivers, streams and marshy areas, not to speak of Lake Balaton.

[76] *Jochim* (1990) 183–185; *idem* (2002) 134.

[77] *Jochim* (1990) 186.

The Early Neolithic buildings of South-East Europe

The archaeological record clearly indicates that rectangular houses with raised walls, representing a typically and exclusively Neolithic tradition, spread fairly rapidly as shown by the numerous Early Neolithic house remains. One important difference is that while at Ilipinar the use of adobe bricks became typical around 5000 BC, the houses in the Balkans were almost exclusively of the wattle-and-daub type; the use of adobe bricks was restricted to Greece.[78] A building of this type, constructed of adobe bricks, was uncovered in the Early Neolithic layer 4 at Otzaki Magoula and, also, at Pyrasos near Volos.[79] This difference in construction materials became a distinctive trait in the two regions; wattle-and-daub buildings are absent from the Near East and Anatolia. The abandonment of adobe bricks as a building material in South-East Europe can perhaps be attributed to the fact that the groups familiar with this type of Neolithic house construction had left Asia Minor at an earlier date and that they no longer maintained contact with the communities there. Alternately, it is also possible that the spread of wattle-and-daub houses was a consequence of geographic and climatic conditions since it seemed more practical to reinforce the daub walls with wattling. On some sites, stone was also used for the wall foundations, especially in areas with abundant lithic resources.[80] This issue will no doubt be resolved by the full excavation and evaluation of the settlement sites in Macedonia and in Turkish and Bulgarian Thrace.[81]

The first securely datable above-ground houses can be dated to the final centuries of the 7th Millennium BC in Thessaly.

The appearance of houses with raised walls at Argissa Magoula has become inextricably linked to the debate on the presence or absence of a preceramic Neolithic in South-East Europe. This debate began in 1958 and has still not been conclusively resolved;[82] however, I shall here only discuss the problem of houses. During his investigation of the site, V. Milojčić found the earliest house at a depth of 7.88 m.[83] He also investigated the underlying level in order to ascertain that the virgin soil had indeed been reached. He defined the 40–100 cm thick deposit under the house as representing an aceramic phase. Irrespective of how this layer can be interpreted and of whether the building can be assigned to this aceramic phase,[84] it is fairly clear that in this case too we are faced with the problem of the "pit horizon" preceding the construction of the earliest houses. With the exception of pit alpha, the other pits were amorphous with an uneven floor and they cut through each other, indicating that they were not contemporaneous.[85] Neither can it be excluded that aside from the later intrusions, postholes and amorphous pits, some pits of this "pit horizon" were in fact natural depressions in the virgin soil. What emerges clearly is that in Thessaly, the appearance of rectangular buildings with raised walls was contemporaneous with the emergence of sedentism.[86]

The above-ground house at Otzaki Magoula constructed from adobe bricks was also a rectangular building.[87] Similar rectangular buildings characterized the Early Neolithic settlements at Prodromos–Karditsa and Megali Vrsi (Hagia Anna).[88]

[78] *Treuil* (1983); *Démoule–Perlès* (1993) 370.

[79] *Milojčić* (1971) 16; *Elia* (1982) 174

[80] *Démoule–Perlès* (1993) 370.

[81] Cp. the investigations by M. Özdoğan, T. Efe, B. Erdoğu, J.-P. Démoule, K. Kotsakis, L. Perničeva, I. Gatsov and V. Nikolov.

[82] *Lichardus–Pavúk* (1963). *R. Tringham* (1971; 1973) has challenged the existence of a preceramic Neolithic, while *Elia* (1982) has argued for such a phase. A. Reingruber is currently working on a PhD thesis devoted to the discussion of this issue. I would here like to thank her for sharing her views with me.

[83] *Milojčić* (1960), Planum XXIXa and XXXIa.

[84] A total of 291 sherds were found under the house and 371 sherds were recovered from the level of the house – it seems unlikely that these were all intrusive finds.

[85] *Elia* (1982) 124.

[86] For a good overview of the debates over the possible existence of a Greek aceramic or preceramic Neolithic, cp. *Perlès* (2001) 64–96.

[87] *Milojčić* (1971) 16.

[88] *Elia* (1982) 176, 183.

At Sesklo, however, D. Theokharis found an oval, slightly amorphous pit under the three rectangular houses of the Early Neolithic layer (EN I) that he interpreted as a pit-dwelling.[89] Similarly to a number of other sites, the earliest house with raised walls at Achilleion was also preceded by a "pit horizon".[90] However, only a small section of the layer underlying the earliest houses of the I/b-c phase at the site was investigated; this layer contained no architectural features whatsoever. It remains to be resolved whether these features perhaps represent the pits dug prior to the first architectural phase.[91] At Achilleion, the pit-dwellings of phase Ia had a regular, horizontal floor.[92] The earliest house with raised walls had little in common with the Early Neolithic houses of South-East Europe since the terre pisé walls were erected on a stone foundation. Wattle-and-daub houses first appeared in layer IIa, dated to the late 7th Millennium BC. The reconstruction of the timber-framed building uncovered in phase IIIb had a gable roof.

Moving northward we find increasingly more wattle-and-daub houses. A number of such buildings, measuring 5–8 m by c. 5 m, have been reported from Servia, Mandalo, Thermi and Megalo Nisi Gulanis in Macedonia and Thrace.[93] A total of twenty-four (!) timber-framed houses were uncovered during the successive campaigns at Nea Nikomedeia in Macedonia;[94] the excavators also published a reconstruction of one of these buildings.[95] Wattle-and-daub buildings became the norm in the Middle Neolithic, corresponding to the Karanovo III period. At Sesklo, for example, such houses were found in three settlement nuclei (although it is unclear whether these were contemporaneous).[96] The Early Neolithic above-ground buildings in the northern part of Bulgarian Thrace were rather small, becoming slightly larger to the north. At Elešnitsa in Bulgarian Thrace, 13 m long post houses were found;[97] the Muldava site yielded four quadrangular houses measuring 4 m by 4 m and 7 m by 7 m, none of which contained internal postholes.[98] At Jaša Tepe near Plovdiv, the remains of a quadrangular house with a floor area of 6 m by 6 m were brought to light in the earliest occupation phase, while the next phase (phase Ib) had two or three similar houses.[99] One of the most important sites for studying Neolithic architecture is Karanovo, where "Bauhorizont" I and II were characterized by rectangular, single roomed, above-ground buildings with a length of 7–8 m. The new buildings usually copied earlier groundplans. A major change can be noted from Karanovo III, when multi- (three-)roomed houses with a porch first appeared and replaced the earlier house types, no doubt the result of local development.[100]

It would appear that by the 6th Millennium BC, two distinct traditions emerged in above-ground house construction since we encounter different types of buildings in the north and the northeast than in the Central Balkans and to its northwest.[101] In addition to the disappearance of tell settlements north and northeast of central Bulgaria, the houses uncovered at Ovčarovo–Platoto, Ovčarovo–Gorata, Poljanica–Platoto and Koprivets stand out by their small size.[102] The same tradition can be

[89] *Theokharis* (1973) 40, 45.

[90] *Winn–Shimabuku* (1989) 32–50.

[91] A similar problem was encountered when interpreting the stratigraphy of Gura Baciului (Bácsi Torok): the excavators suggested that a horizon with pit dwellings preceded the first above-ground houses. Cp. *Lazarovici–Maxim* (1995) 64, 68, 352–360.

[92] *Winn–Shimabuku* (1989) 34.

[93] *Alram-Stern* (1996) 110–111; *Ridley–Wardle* (1979).

[94] *Rodden–Pyke–Yiouni–Wardle* (1996) chapters 2 and 3; *Lichter* (1993) 43; *Bailey* (2000) 44.

[95] *Pyke* (1996) 43.

[96] *Kotsakis* (1996) 52; *Bailey* (2000) 44.

[97] *Pavúk–Čohadziev* (1984), *eadem* (1993) *Fig. 3.*

[98] *Detev* (1968) *Fig. 5 and Fig. 29.*

[99] *Detev* (1959); *idem*(1960).

[100] Hiller in *Hiller–Nikolov* (1997) chapter 4, esp. 55–57.

[101] J. Kozłowski reached a similar conclusion from his study of the lithic finds. In his opinion, the development of eastern Bulgaria and the Pontic region took a different direction in the early Holocene than the Crvena Stijena type settlements in the west. Kozłowski (1996) 142.

[102] *Todorova–Vajsov* (1993) 127–128. The houses of the Ovčarovo settlement were no larger than 4 m by 4 m; only so much is known about the house uncovered at Koprivets that it was a small building. *Bailey* (2000) 59.

noted on the Early Neolithic settlements on the Romanian side of the Danube and to its north: these sites were characterized by small houses measuring 4 m by 4 m or 5 m by 3 m large houses. Buildings of this type have been reported from Ostrovul Golu,[103] Broneşti,[104] Cleanov–Fiera,[105] Cîrcea–Viadukt,[106] and a series of other early Criş sites in Oltenia and Moldavia.[107] It can hardly be mere chance that this regional difference corresponds to the divergence observed in the Mesolithic and that the boundaries between the two lie in more or less the same area.[108]

The concentration of the sites in the Lower Danube region, in the Danube Gorges is an entirely different story. It is my belief that the problem of the origins of Linear Pottery houses is basically unrelated in different points to the buildings uncovered in this region. Firstly, it would appear that the settlement concentration in this area is one of the unique features of the prehistory of South-East Europe and that it is one of the regions where the transition to the Neolithic can be well traced. (One of my main arguments in the present study is that there were several independent centres of neolithization and, also, that western Transdanubia and the Balaton region was one of these centres.) Secondly, it must also be borne in mind that even though the Danube Gorges – due to its importance – have been more intensely researched than other regions, there has been a perceptible change in scholarly opinion since Dr. Srejović's death – a wealth of new finds and stratigraphic observations have placed both the chronology of these sites and the evaluation of the early building horizons in a new perspective.[109] This is the reason that I included a brief description of the house remains left by the hunter-gatherer communities in the Danube Gorges in the section on possible Mesolithic antecedents. What must here be noted is that the Danube Gorges and the Lower Danube region can be assigned to the eastern branch of Balkanic development. It has been suggested that the local late Mesolithic development came to halt and that even if the cultural development of this region, surviving into the Early Neolithic (Criş culture), can hardly be termed a cultural dead end, it certainly lay beyond the Balkanic mainstream of neolithization.[110] The assumption that the traditions of this region did not play a significant role in the emergence of Central European longhouses seems valid.

In contrast to the Lower Danube region, the rectangular timber-framed houses in western Bulgaria are much larger. The length of the repeatedly renewed Early Neolithic house excavated at Slatina near Sofia was 13 m![111] The large postholes, often with a diameter of 40 cm, associated with the houses at the Pernik and Gălăbnik sites indicate rather massive buildings. Similar post-houses with wattle-and-daub walls stood on the Čavdar settlement.[112] These rather massive buildings, designed for permanent occupation, were constructed in an area that was often flooded and the environment itself was more suited to pasturing and hunting than to crop cultivation.[113] Comparable houses have been reported from three sites near Gradešnitza in northwestern Bulgaria.[114]

V. Nikolov has claimed that one possible route of neolithization led through the Struma Valley in western Bulgaria;[115] this route perhaps explains the diffusion of tells and of large-sized house types, even if our knowledge of this region is rather sketchy (with the exception of the Kovačevo site[116]).

[103] *Lazarovici* (1979) 25–26.

[104] *Comşa* (1971) 204.

[105] *Comşa* (1971) 205.

[106] *Nica* (1977) 14; *Thissen* (2000a) 278–279.

[107] *Ursulescu* (1984) 83.

[108] *Kozłowski* (1973); *Tringham* (1973); *Radovanović* (1996).

[109] It would be difficult to even list the abundance of studies on Lepenski Vir, Padina, Vlasac, Hajdučka Vodenica, Kula, Ostrovul Corbului, Razvrata and Schela Cladovei. Good overviews of these sites are provided by *Srejović* (1989); *Radovanović* (1996); *Roman–Păunescu* (1996); *Borić* (1999); *Bonsall et al.* (1997), and the papers read at the conference on the Mesolithic held in April, 2000 in Edinburgh (*Bonsall* [2000]).

[110] *Radovanović* (1996) 43.

[111] *Nikolov* (1989a) 2.

[112] *Georgiev* (1961) 65–81.

[113] *Dennell* (1978) 80–111.

[114] Gradešnitza–Malo polé, Kaleto and Gradišteto. *Nikolov* (1974); *Lichter* (1993).

[115] *Nikolov* (1989b).

[116] *Démoule* (1993); *Démoule–Lichardus-Itten* (1994); *Perničeva* (1990); *Perničeva* (1995).

Moving further west, another possible route of diffusion, the middle and upper reaches of the Vardar River, is outlined by the timber-framed buildings uncovered at Kolsh,[117] the 7 m long, wattle-and-daub houses found at Porodin[118] and the 8–10 m long post-houses excavated at Anza.[119] The earliest Neolithic houses at the Veluška Tumba tell settlement were often 11–12 m long.[120] The Adriatic coast, however, was most probably not part of the Balkanic culture province, as shown not only by the use of Cardial ware on the Early and Middle Neolithic settlements of this region, but also by the house constructions. S. Batović reconstructed circular, above-ground buildings from the house remains found at Smilčić.[121]

Another boundary, marking a difference not only in architectural traditions, but perhaps also among the culture provinces of early farming communities, probably lay somewhere in central Serbia. Let us first briefly review the evidence on house types. It would appear that north of Kragujevac and west of the Morava River, where the rivers and smaller streams leave the high mountains, there was a break in the perceptible dynamism of house construction. The earliest houses at Divostin reflect a different tradition than the Starčevo houses in the south. The fanciful pit dwellings reconstructed by M. Bogdanović for the lowermost level are controversial since these pits may equally well have been clay extraction pits or foundations for the first houses,[122] although the posthole in the centre of these pits may rightly be interpreted as having supported the purlin. Another *caveat* in the interpretation of these pits is the series of smaller postholes encircling one of the oval pits, resembling the ones surrounding the Karanovo I houses (for example at Slatina). Any reconstruction of the function of these pits is further complicated by the pits of the Starčevo culture (suffice it here to quote the Grivac, Starčevo–Grad and Banja,[123] as well as the Starčevo sites in Slovenia, to be discussed below). The most remarkable observation is that rectangular, post-framed houses with wattle-and-daub walls were built above these "pit-dwellings": the twenty-three houses uncovered at Divostin were almost without exception smaller than 10–12 m^2, small huts compared to the buildings in the south.[124] The rectangular, single-roomed house excavated at Nosa–Biserna obala (Nosza–Gyöngypart) and the building found at Obrez, similarly to that of the eponymous site, overlay pits at both sites.[125]

One of the key sites for Early Neolithic houses could be Donja Branjevina. Unfortunately, the majority of the Starčevo (and perhaps Körös) finds were recovered from pits; at the same time, no postholes were observed around these pits.[126] The lack of houses at this site is all the more regrettable because the Donja Branjevina site lies on a flat ridge rising above the marshland near the Danube, in an area to whose north there is a conspicuous increase of Körös sites. We now know that Körös communities settled not only in the Körös region north of the Maros River, but also in the southern part of the Danube–Tisza Interfluve (part of historical Bács county), up to the Kalocsa area.[127] The other importance of the Donja Branjevina site lies in the fact that there is a visible concentration of Starčevo settlements in this area and that major Starčevo sites are known from the western Srem

[117] *Korkuti* (1983); *idem* (1996) 61–64.

[118] *Grbić* (1960).

[119] *Gimbutas* (1976).

[120] *Simoska* (1985); *Simoska–Sanev* (1975).

[121] *Batović* (1966) 218.

[122] *Bogdanović* (1988).

[123] For a good overview, with further literature, cp. *Bailey* (2000) 54.

[124] Most houses measured 3.4 m by 2.5 m. *Bogdanović* (1988) 36.

[125] *Garašanin* (1958) 10, Fig. 8; *Brukner* (1974) 34–35; *idem* (1960) 19.

[126] *Karmanski* (1990); *idem* (1993). Although he published a photo on which a feature resembling a series of postholes can be made out (Fig. 2), only the uneven floor of these pits can be seen and there is no detailed description of the photo in the text.

[127] In the autumn of 2000 and the spring of 2001, I examined the finds from the earlier field surveys together with Jörg Petrasch of Tübingen University and we also conducted a new field survey in the area.

towards Slavonia.[128] A conclusive answer to the question raised by W. Meier-Arendt in 1989,[129] namely of whether the origins of the Linear Pottery houses should be sought in the Körös region, can only be hoped from a knowledge of the house types in the contact zone between the Starčevo and Körös culture (if a marked boundary ever existed between the two).

It was for a long time believed that the Körös population lived in pit dwellings. However, the remains of timber-framed, above-ground houses have been brought to light on several sites, one of these being the one uncovered at Ludas–Budjak/Budzsák.[130] The clay house model with a gable roof published by O. Trogmayer too suggested the existence of post-houses.[131] In 1943 J. Banner excavated a building at the Hódmezővásárhely–Kotacpart-Vata tanya site, and from the remains he reconstructed a building lacking raised walls and provided with a roof that rested the ground.[132] From his study of the evidence F. Horváth concluded that the irregular burnt debris rather suggested a north oriented building with a gable roof measuring roughly 5 m by 5 m.[133] Although Horváth did not discuss this building at greater length, the presence of burnt daub fragments with twig impressions suggested to him that the building had vertical walls. Not long after Trogmayer's publication of the above-mentioned house model, a Körös house of the rectangular, post-framed South-East European type with wattle-and-daub walls and a gable roof was uncovered at Tiszajenő–Szárazérpart.[134] The house itself was some 9 m long. One of the most thoroughly excavated Körös settlements was the one at Szolnok–Szanda, investigated in the late 1970s.[135] The excavators uncovered six buildings arranged into two rows on a small mound rising above the Tisza floodplain.[136] A series of postholes ran along one side of the plastered clay floor of these houses. A similar house, measuring 6 m by 5 m, was found at Dévaványa–Katonaföldek. The rather thin walls suggested that this building had probably been briefly occupied.[137] Remains of a house floor covered with finds of the Körös culture was uncovered at Szentes–Ilonapart.[138] The more recently investigated Körös settlements include the Szajol–Felsőföldek site that yielded the remains of a roughly 7.4 m by 4.5 m large house. One interesting feature of the Szajol house is that an internal wall divided the building into two rooms and that a porch or ante-room could also be assumed.[139] Two timber-framed houses with wattle-and-daub walls were uncovered at Endrőd–Öregszőlők, site 119, both built over refuse pits (these pits were not regarded as representing a "pit horizon" as at other contemporaneous sites).[140] The presence of the Criş culture in the Bihar region is indicated by the Suplacu de Barcău (Berettyószéplak) site, where several rectangular houses built on a wooden or stone foundation were found, but no postholes were observed.[141] Finally, mention must also be made of the Gura Baciului (Bácsi Torok) settlement, lying farther from the sites in the Lower Danube region and probably dating to the earliest Criş period, where three occupation levels were distinguished: an early pit horizon, followed by two levels, each yielding houses with raised walls.[142]

[128] *Garašanin* (1979a) 117, distribution map.
[129] *Meier-Arendt* (1989) 184.
[130] *Szekeres* (1967) 11–12; *idem* (1986) 17–18.
[131] *Trogmayer* (1966).
[132] *Banner* (1943) 11.
[133] *Horváth* (1988); *idem* (1989a) 17; *idem* (1989b) 85.
[134] *Selmeczi* (1969) 17–22. For a reconstruction of this house, cp. *Tringham* (1971) Fig. 14; this house and its finds were later published by P. Racky: *Raczky* (1976).
[135] *Kalicz–Raczky* (1980–81). Unfortunately only the preliminary report is available, and a study on the custom of burials inside houses (*Raczky* [1982–83]); the full publication of the rich finds and the six houses is still lacking. P. Raczky mentioned that the number of pottery finds ran into the several hundred thousands (*Raczky* [1988] 17).
[136] *Kalicz–Raczky* (1980–81) 13, Fig. I/1.
[137] *Horváth* (1989a) 17–19.
[138] *Horváth* (1983) 24.
[139] *Raczky* (1977); *Raczky* (1982–83) 10.
[140] *Makkay* (1992) 125–127.
[141] *Ignat* (1983); *Ignat* (1998) 99–100.
[142] *Lazarovici–Maxim* (1995) 346–354, esp. 353.

The few known above-ground houses of the Körös culture clearly show that their origins lie in South-East Europe, their closest analogies being the buildings in the Morava region. In this sense they are part of the tradition that evolved north and northeast of central Serbia. The rectangular houses are smaller and, with the exception of the house uncovered at Szajol, they appear to have been single roomed. There is little evidence for a timber framework. Even assuming that a part of the timber posts were set into postholes dug into the humus, the roofing of these houses was no doubt a rather flimsy affair.

The Neolithic architecture in the Srem and in the Starčevo distribution to its west and northwest shows a rather different picture, or, better said, the surprisingly few house remains from this region suggest a different tradition. The "dwelling-pit horizon" mentioned above has been documented in the lowermost level at Vučedol and Sarvaš,[143] while the so-called Protokakanj I level at Obre already has above-ground houses. N. Kalicz agrees with many other prehistorians who believe that this architectural tradition probably evolved at some earlier date since the impressive layer sequence at the Obre site can hardly be explained otherwise.[144] Above-ground houses with vertical walls have also been hypothesized at Crnokalačka Bara,[145] as well as at Obrez, Divostin and Kozluk.[146] The remains of three north-south oriented houses measuring 8 m by 4 m have been uncovered at Zlatara in the Srem.[147] Other prehistorians studying the local Starčevo culture are of a different opinion. In her study on the northern Croatian distribution of the Starčevo culture, K. Minichreiter mentions forty-two sites, all having dwelling and workshop pits.[148] In her opinion, the open, hilltop settlements were the continuation of Mesolithic traditions. However, there is no conclusive evidence to support this claim. Minichreiter also distinguished different types of pit-dwellings according to their form and function.[149] She defined smaller pits with a diameter of 2–3 m as workshops and the larger, often amorphous pits with a diameter of 4–8 m as dwellings. A series of postholes were often observed along the edge of these "pit-dwellings", suggesting some sort of roofing over these features. At the Zadubravlje settlement, lying by the Sava, K. Minichreiter even distinguished separate residential and workshop 'quarters', the latter including also an unusually long pit interpreted as a pottery kiln[150] and she also presented a rather imaginative reconstruction of the settlement.[151] However, a closer look at the overall plan of the Zadubravlje settlement reveals two parallel rows of postholes between the oval pits (ditches?) above the amorphous pits;[152] the publication does not offer an interpretation of these postholes. The area outlined by these postholes can be conceptualized as a roughly 8–9 m wide and about 12 m long building. It is possible that these represent traces of the repeated renewal of fences associated with the ditches, but an equally plausible explanation is that the 'trenches' were actually clay extraction pits dug before the construction of the house and that the amorphous pits – alternately interpreted as dwellings and as clay extraction pits – in fact represent the "pit horizon" preceding the earliest houses. A similar phenomenon can be postulated for the settlement at Golokut–Vizić on a high plateau in the Fruška Gora Mountains: it is possible that traces of an above-ground building have also been preserved in addition to the pits interpreted as dwellings by J. Petrović.[153] The settlement features at Pepelane, nestling between the peaks of the western

[143] *Kalicz* (1988) 25, 31–32.
[144] *Benac* (1973).
[145] *Tasić–Tomić* (1969) 77.
[146] *Brukner* (1982) 141–142; *McPherron–Srejović* (1971) 4; *Jovanović* (1968).
[147] *Leković* (1988a) 108–109.
[148] *Minichreiter* (1992a); *idem* (1992b).
[149] *Minichreiter* (1992b) 21; *idem* (1998); *idem* (2001).
[150] *Minichreiter* (1992c) 39.
[151] Cp. *Minichreiter* (1992a) 30 and the title page; *idem* (1992b) 22–23, 25.
[152] *Minichreiter* (1993a) 98; *idem* (1992c) 39.
[153] *Petrović* (1986–87) 13–28, distribution maps 1–3, 27.

Slavonian Mountains, were similarly determined as a pit-dwelling.[154] K. Minichreiter interpreted the huge pit system, measuring 25 m by 15 m, as the remains of a two-storied pit dwelling in view of the sloping terrain. She uncovered a few postholes on the northern side and a large hearth in the deepest section of the pits.

In my opinion, the examples quoted above and the forty-two sites described in Minichreiter's monograph do not allow the dismissal of possible pit dwellings in the Starčevo culture as a simple 'myth'.[155]

Obviously, neither can we revert to the "*Kurvenkomplexhütter*" proposed by Buttler in the 1930s.[156] The idea of pit-houses (or *Wohngruben*), regarded as a major European tradition since V. G. Childe that shaped the outlook of successive generations of prehistorians, is obviously untenable.[157] Still, it must in all fairness be admitted that evidence for a possible "pit horizon" can only be quoted north of the Central Balkans since no such function was assigned to the storage and refuse pits around the Early Neolithic houses of the Aegean–Balkanic culture province. The postholes around the pits found on the northern settlements of the Starčevo culture undeniably indicate that these pits had been partially or wholly covered with some sort of roofing. No post-framed pits have yet been found in more southerly areas. Is it therefore reasonable to assume that the Early Neolithic communities in the southern Balkans lived in above-ground buildings, while their contemporaries north and west of the Danube and the Sava Rivers huddled in pit dwellings? Can this be taken as an indication of different cultural traditions and the weakening of cultural impacts from the south?

It is my belief that this can be better explained by climatic and geographic, rather than cultural reasons. Bearing in mind M. Özdoğan's argument on the extent to which daily activities were carried out inside the houses and in the open areas outside them,[158] the explanation for a "pit horizon" can probably be sought in outdoor activities. It seems likely that in the southern Balkans, where the climate was warmer and drier, food processing, cooking, eating and tool manufacture were all performed outdoors, in the open areas between the houses. This seems especially true for smaller communities who dwelt in hut-like structures. Farther to the north, in the higher upland between mountains, where the climate was wetter and more windy, conditions were less pleasant for these outdoor activities: fires would be easily extinguished by the rain and the wind, and people would shiver in the cold. This may be the reason that they withdrew into the pits between the houses and that these pits were provided with some sort of protective roofing against the harsher weather. The 'two-storied' pit-dwelling with postholes along its northern section at Pepelane may have been a pit of this type. It is also quite obvious that on sites where there was no need for such pits, only the remains of open-air hearths are found during the excavations. This would explain the presence of "pit-dwellings"; it is my conviction that the excavations conducted over larger areas, such as the rescue excavations preceding the motorway constructions, will eventually bring to light the remains of above-ground buildings beside these pit-dwellings. The series of postholes and some of the long pits found at Zadubravlje can perhaps be seen as the first indications of the emergence of timber-framed buildings and the "*Längsgruben*".

Finally, we must do justice to our colleagues working in Croatia and the Voivodina. In the case of a settlement where an assumed above-ground building was used mainly in winter and predominantly for sleeping, it is perhaps not entirely unjustified to speak of pit-dwellings in the case of pits that were used for cooking, the preparation of hides and leathers and the manufacture of stone tools, in other words, where daily activates were conducted on a regular basis. It is not

[154] *Minichreiter* (1990); *idem* (1992b).
[155] *Kalicz–Koós* (1997a).
[156] *Buttler–Haberey* (1936).
[157] *Childe* (1949).
[158] *Özdoğan* (1997) 10.

my intention to argue for the concept of pit-dwellings, only to point out that the function of the "living room" may have been transferred to these pits provided with a hearth on settlements lying in areas with a harsher climate.

Early Neolithic buildings in Central Europe

Our knowledge of the settlements and the finds of the Starčevo culture in Transdanubia is predominantly based on N. Kalicz's investigations, who summarized the results of his excavations on Starčevo sites in a separate monograph.[159] Unfortunately, none of the currently known Starčevo settlements in Transdanubia yielded house remains; the finds from these sites were without exception recovered from pits.[160] The single possible exception in this respect is the Vörs–Máriaasszonysziget site, where one of the pits had a flat floor – resembling the Slavonian "pit-dwellings" – and two postholes were also found in the investigated area. Only a smaller area could be excavated, partly owing to considerations of environmental protection, and partly because the later occupation of the site destroyed the earlier prehistoric features.[161] In his monograph, N. Kalicz noted the conspicuous decrease of Starčevo sites north of the Drava.[162] The lack of Starčevo settlements between the Kapos River and the southern shores of Lake Balaton is especially striking, particularly in view of the fact that the gently rolling hills and the countless streams flowing into Lake Balaton provided an ideal environment for settlement. The apparent absence of sites cannot be attributed to the lack of research since this area has been intensively surveyed and a number of settlements from other periods have been identified.

In N. Kalicz's opinion, the presence of above-ground houses can be hypothesized from the clay extraction pits and the finds of burnt daub fragments with twig impressions. He has rejected the possible use of sunken houses in Transdanubia.[163] His arguments seem acceptable since the burnt daub fragments undoubtedly originated from above-ground buildings and no sunken floor remains were found either. It would appear that the houses uncovered at Pityerdomb represent the earliest Neolithic houses in this region. The numerous Starčevo and earliest Linear Pottery sites in the Balaton area, identified on the basis of surface pottery and lithic finds, still await excavation and they undoubtedly hold many surprises. At the same time, the excavations conducted at Vörs and Gellénháza (assigned to the late Starčevo period) did not bring to light house remains, and neither did the more recent investigations at Andráshida–Gébárti tó,[164] a site that is geographically and chronologically close to both Pityerdomb and Gellénháza. Similarly to the southern Transdanubian Starčevo sites excavated by Kalicz, these settlements were made up of pits. It is especially regrettable that no house remains were found on the Starčevo sites immediately north of the Drava. In my opinion, the sites at Barcs and Szentlőrinc in Baranya county probably mark the southern boundary of the area where the Starčevo communities colonizing Transdanubia 'invented' – either partly or wholly independently – the house type that was best adapted to the Central European environment and was immediately 'canonized' in the sense that together with a number of practical features, several others that were apparently 'senseless' in a given environment, too became standard traits. The latter include the strict northern orientation, independent of the local environment, and – at least until their exact function is clarified – the "*Längsgrube*" flanking these houses.[165]

[159] *Kalicz* (1990).
[160] *Kalicz* (1990) 41.
[161] *Kalicz–M. Virág–T. Biró* (1998) and Katalin T. Biró's kind personal communication. Cp. also note 1.
[162] *Kalicz* (1990) 39–43.
[163] *Kalicz* (1990) 42.
[164] *Kalicz–M. Virág–T. Biró* (1998); *H. Simon* (1994); *idem* (1996); *idem* (2002).
[165] As at Pityerdomb, for example, where the pits were immediately infilled up to a certain point, usually their two-thirds or three-quarters.

The single early Linear Pottery house in Transdanubia was uncovered at Bicske. This building differs from the Central European Linear Pottery house type – appearing at Pityerdomb in its fully developed form – in several respects.[166] In contrast, only burnt daub fragments with twig impressions indicated the presence of former above-ground houses at Budapest–Aranyhegyi Road, a site yielding an impressive and rich early Linear Pottery find assemblage. Longhouses were found at Dunakeszi–Székesdűlő, assigned to an early Linear Pottery phase (early and Keszthely phase).[167]

The field surveys indicate that the population groups providing vital impulses for the development of the early Linear Pottery longhouse migrated westward from the Kapos Valley, rather than towards the southern shores of Lake Balaton. This is reflected in the Starčevo and early Linear Pottery traits observed on the pottery from the Pityerdomb site. It is probably not mere chance that two latest Starčevo sites and a number of early Linear Pottery settlements were identified west of Lake Balaton. The location of early Linear Pottery settlements with longhouses flanked by genuine "*Längsgruben*" northwest of the Pityerdomb site apparently corresponds to this diffusion route, outlined by the distribution of houses. These sites show a concentration in Lower Austria near the Hungarian border, in the Vienna area and in the Danubian Basin to the west and northwest.

Rectangular, above-ground houses built around a timber frame were uncovered at Neckenmarkt.[168] Each of these houses was divided into three rooms. One interesting point in the detailed publication is that some of the houses belonging to the earliest phase had a trapezoidal groundplan.[169] A total of forty-three buildings, some as long as 20 m, were excavated at the Brunn–Wolfholz/Gebirge settlement. Only some of these houses date to the earliest Linear Pottery period,[170] and it seems likely that there were no more than three or four contemporary houses at any given time, a conclusion in line with J. P. R. Modderman's assumption based on his analysis of Bohemian and Dutch sites.[171] The "*Längsgruben*" flanking the earliest houses at the Brunn II site could be well documented, as could the house foundations on the inner side of these pits. J. Lüning and E. Lenneis, one of the perhaps most dedicated researchers of the Linear Pottery culture in Austria, directed the complete excavation of the Strögen and Rosenburg sites, both investigations part of an international research project.[172] Compared to the buildings at Brunn and Rosenburg, the houses uncovered on these two sites were smaller. Only four houses could be assigned to the earliest period; these were categorized as "*Bauten*" since only their middle and southern part had been constructed and they could not be assigned to the "*Langbauten*" type.[173] The triple posthole, the "*Querjoch*" was observed at the southern end of these buildings. The Rosenburg settlement was made up of seven houses: the largest was 15 m long, the smallest (house 4) was only 8 m long. E. Lenneis uncovered a similar building, perhaps with a loft for storage at the southern end, at Mold.[174] St. Hiller agrees with E. Lenneis that storage lofts were more characteristic of "*Grossbauten*" type buildings and that these lofts usually lay in the southern part of the house.[175] According to H. Windl, a smaller section of the large, fortified Linear Pottery settlement Asparn an der Zaya can be assigned to the early phase of the culture.[176] A smaller

[166] *Makkay* (1978); *Makkay–Starnini–Tulok* (1996) 11, *Fig. 3.*
[167] *Horváth* (2002a); *idem* (2002b).
[168] *Lenneis–Lüning* (1986b) 207.
[169] *Lüning* (2002 [2001]) 423.
[170] P. Stadler's excavation. *Stadler* online; *Lenneis* (1995) 18; *Stadler* (1999).
[171] *Modderman* (1988) 98–99.
[172] *Lüning–Lenneis* (1986) 218; *eadem* (1986a); *Lenneis* (1990); *Lenneis* (1991) *Fig. 6; idem* (1992) 23; *idem* (1995) 18.
[173] *Modderman* (1972).
[174] *Lenneis* (1995) 18.
[175] *Hiller* (2001) 248.
[176] *Windl* (1990).

house, probably with the central section only, was found at the early Linear Pottery settlement uncovered Mohelnice in Moravia; the size of this building could not be precisely determined owing to the many later intrusions.[177]

North and west of this region we find the Linear Pottery longhouses described and discussed by Prof. J. Lüning's former students in various monographs and studies. The earlier excavated houses include the building with the central section at Altdorf near Landshut in Bavaria.[178] Remains of supports for the eaves were also observed beside the house flanked by the long pits. A building with triple postholes, assigned to the "*Kleinbauten*" category, was brought to light at Sallmansberg, also lying near Landshut.[179] At the Mintraching site, the northern section of the house was also uncovered.[180] A similar house, belonging to the "*Kleinbauten*", was found near Straubing.[181] The posts supporting the roof were arranged randomly inside the early Linear Pottery house excavated near Enkingen,[182] while the two houses uncovered at Altershofen–Köfering by Regensburg and dated to the earliest occupation phase resembled the Pityerdomb houses in that there were three rows of posts inside them.[183] A number of early Linear Pottery buildings were also brought to light at Niedereschbach.[184]

The impressive early Linear Pottery settlement at Eilsleben by Magdeburg, covering some fifteen hectares, was excavated during several successive campaigns by D. Kaufmann. Although no houses were found as far as I know,[185] this site is at least as crucial for our understanding of the Linear Pottery as the one at Bylany in Bohemia, where a great number of early Linear Pottery houses, lying at a fairly great distance from each other, were brought to light by I. Pavlů.[186] The houses of Bylany had the northern part with the bedding trench, although a few houses were constructed without this bedding trench.[187] The Schwanfeld site near Schweinfurt with its four complete and three incomplete early Linear Pottery house remains can perhaps be seen as a possible precursor or link in the chain of early settlements.[188] Each house was flanked by long pits and countless triple postholes were found, suggesting a heavy and massive roof structure. Most of these houses had the northern section whose function has usually been interpreted as a byre. The northern part of house 11 was encircled by a bedding trench; this feature can be regarded as a genuine Central European innovation since the currently known Linear Pottery longhouses from the Carpathian Basin lack this feature.[189] The early Linear Pottery houses from Rosdorf near Göttingen in northern Germany must also be mentioned: at this site, the smaller houses were scattered between the longer and larger houses.[190]

[177] *Tichý* (1962) 302, *Fig. 3.*

[178] *Reinecke* (1983) 39.

[179] *Bring-Kloke* (1992) *Fig. 2/28–29.*

[180] *Lüning* (1987) 34.

[181] *Bring-Kloke* (1992) *Fig. 3/15.*

[182] *Lüning* (1987) 33.

[183] *Bring-Kloke* (1992) *Fig. 2/5–6.*

[184] *Bernhardt–Hampel* (1992); *Hampel* (1992).

[185] *Kaufmann* (1982); *idem* (1983).

[186] *Pavlů* (1981); *idem* (1982) 197; *Pavlů et al.* (1986); *Pavlů* (2000) Chapter 7.

[187] *Pavlů* (1981) 534–543.

[188] *Lüning–Modderman* (1982) 66–67; *Meier-Arendt* (1989).

[189] The variations in the construction of the northern part has prompted speculation among prehistorians to interpret this part of the longhouses as a byre. There have been a number of attempts to demonstrate that the assumed higher phosphate concentration reflects the presence of animal manure. As far as I know, the first such analysis was conducted on samples from Olszanicza (*Milisauskas* [1986]), but neither at that site, nor in the houses investigated by H. Stäuble and J. Lüning could a higher ratio of phosphate be demonstrated in the northern part of the houses. As a matter of fact, it turned out that the ratio of phosphate was rather low inside Linear Pottery houses. One alternative explanation for the different ratios of phosphate inside the houses was the differing hygienic conditions in different parts of these houses. *Stäuble–Lüning* (1999) 183.

[190] *Schlüter* (1983) *Figs 9–12.*

More recently excavated Linear Pottery houses include Eitzum, lying farther to the south in Lower Saxony,[191] and Bruchenbrücken in Hessen.[192] One important observation made at the latter site was that only the deeper dug postholes of the nine earliest Linear Pottery houses survived. The scope of this study does not permit a detailed overview of the perhaps most extensive research project conducted on several sites of the Aldenhovener Platte in the Rhine region (Langweiler and the Merzbachtal area), whose findings were published in several volumes together with a wide range of analytical studies. Much of our knowledge about Linear Pottery houses comes from the studies written for these volumes by J. Lüning, P. Stehli, A. Zimmermann and their colleagues.[193] The research in the Aldenhovener Platte allowed the precise reconstruction of the Linear Pottery house types as defined earlier by P. Modderman, as well as of the yards associated with these houses and of the wide range of activities conducted in the yards. The examination of the finds and features inside the houses also contributed to a better understanding of the use and function of various areas in the house.[194]

Orientation of the houses

One of the most interesting features of Linear Pottery houses is their orientation. It would appear that the orientation of Linear Pottery houses was often independent of local conditions in smaller or larger regions. The determination of where this conservative tradition originated from can offer valuable clues for the origins of the houses themselves.

Unfortunately, the orientation of the Early Neolithic houses from South-East Europe is rarely specified in the publications and very often the illustrations lack a north arrow. C. Lichter's monograph, covering the entire Neolithic and the Early Copper Age (and thus with only a few data on Early Neolithic houses), contains a wealth of data on the orientation of prehistoric buildings; his book, however, contains little information on Early Neolithic houses.[195] A collation of his catalogue with my own data collection offers a number of interesting points concerning the orientation of Linear Pottery houses.

The first group is made up of settlements where there is no indication of a uniform orientation, suggesting that the houses were sited according to some other principle. Most of the southern, stratified tell settlements can be assigned here. One good example of this type is provided by the lower levels of the Karanovo tell: the buildings of phase I and II were more or less aligned to each other. The same phenomenon can be observed on a number of other settlements, where the space enclosed by the houses was more important than the orientation of individual buildings.[196] It has also been suggested that one of the main principles of tell architecture was that new houses were erected over earlier ones and that the continuous use of the areas between the newly built houses was a form of remembering the ancestors and expressed "the continuity of the house and the household".[197] In the case of closely packed houses, the position of neighbouring buildings was also important. At Servia, for example, it is fairly obvious that the houses had been built relative to each other, without a uniform orientation. The same holds true for the Veluška Tumba settlement, where the first house was east–west oriented, while the second was north–south oriented. Two west–east and two northwest oriented houses were found at Čavdar. It would appear that the orientation of individual houses did not play a role on stratified tell-settlements and that the

[191] *Stäuble* (1990) 333.
[192] *Stäuble* (1997) 65, Fig. 22, with an overview of the house types from *Bruchenbrücken*.
[193] *Lüning–Stehli* (1994); *Boehlicke et al.* (1988); *eadem* (1997); *Lüning* (1988b); *idem* (1997).
[194] *Lüning* (1997); *idem* (2000).
[195] *Lichter* (1993).
[196] Cp. J. C. Chapman's theory "from space to place": *Chapman* (1989a); *Steadman* (2000) 194.
[197] *Kotsakis* (1999); *Nanoglou* (2001).

position of houses or house clusters relative to each other was more important. These settlements can mostly be found in the southern Balkans, where the strict orientation characterizing Linear Pottery houses is lacking.

The second group is made up of the Early Neolithic houses that have a specific orientation, but this differs from the strict northern or northwestern orientation of early Linear Pottery buildings. Examples for this can mostly be quoted from northeastern Bulgaria and the Lower Danube region in Romania. At Ovčarovo–Platoto, for example, the orientation of the buildings of the preceding phase took primacy over an orientation according to the cardinal points. The houses of the Suplacu de Barcău (Berettyószéplak) settlement in Romania shared a common orientation, usually to the east or northeast. The same orientation characterized the buildings of the Cîrcea–Viadukt settlement. A northeast oriented building of the Alföld Linear Pottery has been reported from Krasznokvajda, lying on the fringes of the culture's distribution, in the Cserehát Mountains.[198] Three other early settlements are known from eastern Hungary, where the houses were east–west or east-southeast–west-northwest oriented: a Körös house from Tiszajenő and from Szolnok–Szanda, as well as the houses of the early Alföld Linear Pottery culture from Füzesabony–Gubakút, probably contemporaneous with the late Körös culture.[199] A late Linear Pottery site was investigated during the rescue excavations preceding the motorway construction leading northeast from Budapest; all the settlement features were aligned towards the northwest.[200] Although very few Alföld Linear Pottery houses are known, it seems likely the buildings of the Kompolt 14 settlement followed the traditions of the early Szatmár II period.[201]

The tradition of aligning houses to the north, irrespective of the narrower or broader environment, appears to have originated in western Bulgaria, northwestern Bulgaria and the Morava Valley. The southernmost such houses have been reported from Nea Nikomedeia, where twenty-four buildings were aligned to the north or the northwest. A similarly north-oriented house is known from Porodin. The Jaša Tepe, Muldava, Slatina and Gradešnitza–Malo Pole sites too featured north-oriented houses; a total of sixteen houses were aligned to the north at the latter settlement.

Only one single piece of information for orientation is known from the Starčevo settlements in the Srem: the three rectangular buildings uncovered at Zlatara were north–south oriented.[202] Unfortunately, information on the orientation of the buildings are lacking exactly from the northern and northwestern distribution of the Starčevo culture, from the very region that may have been a contact zone. In the lack of data and in view of the other archaeological evidence for cultural diffusion, we may at the most only assume that the above-ground houses of the Starčevo culture – that *must have existed* – in Slavonia and southern Transdanubia were oriented to the north.

We know that a few oval buildings of the Central European Mesolithic were aligned to the north: even a hearth in one such building was oriented to the north.[203] We may therefore assume that the northern orientation of the buildings had some kind significance. Even though there is no evidence for Mesolithic buildings from Transdanubia, the Mesolithic finds suggest that these communities maintained contact with each other and were perhaps also related.

The two houses uncovered at Szentgyörgyvölgy–Pityerdomb were exactly north-oriented. This is the southernmost site from where there is information on the orientation of early Central

[198] *Losits* (1980).

[199] *Domboróczki* (1997) 20–21; *idem* (1999); *idem* (2001a) 84.

[200] *Bánffy* (1999) 140–142.

[201] The orientation of the Linear Pottery house from Dévaványa–Katonaföldek is not known. Cp. *Horváth* (1989a) 17–19.

[202] *Leković* (1988a) 109.

[203] The houses at Oerlinghausen and Sarching. Cp. *Luley* (1992) 6, 147, 150.

European buildings. The list can be complemented with a number of Austrian and German sites, such as House 4, the earliest Linear Pottery building at Strögen, also oriented to the north.[204] The early Linear Pottery houses found at Schwanfeld, Mintraching, Wang/Freising, Enkingen and Kleinsorheim in Bavaria were also strictly aligned to the north,[205] as were all the earliest buildings at Bylany in Bohemia.[206] Later, the orientation of Central European Linear Pottery houses diverged a little to the west; an excellent discussion of the causes leading to this shift in orientation has recently been published.[207]

A negative example: the "ploshchadki"

We may also cite a phenomenon whose conspicuous lack in the Early Neolithic of Central Europe clearly indicates the differences in the architectural traditions of the eastern and western Balkans and the regions to the west. The floor consisting of a clay plastering over a raised wooden subframe called "*ploshchadki*" owing to its frequency in Eastern Europe has only been documented in the Late Neolithic Herpály culture of the Great Hungarian Plain and has not yet been reported from Transdanubia or from regions to its northwest. The "*ploshchadki*" floors in the Late Neolithic houses of the Great Hungarian Plain were probably introduced from the east, from the distribution area of the Petreşti and Erősd (Cucuteni) cultures, where this floor type was most likely an earlier tradition.

The survival of the Linear Pottery longhouse in Transdanubia

Until recently, most prehistorians only dreamt of finding a longhouse on the early Linear Pottery sites in Transdanubia. The first longhouse remains were uncovered by I. M. Egry in the Mosonszentmiklós area, during the rescue excavations preceding the construction of the M1 motorway.[208] According to the excavation report, a total of eighteen houses were uncovered, although the settlement itself was probably larger. A number of Linear pottery settlements with houses were also investigated prior to the construction of the motorway bypassing Budapest.[209] In 2000 K. Oross and T. Marton began the excavation of a Linear Pottery settlement near Balatonszárszó, originally the 'by-product' of the investigation of a medieval settlement.[210] They uncovered a settlement with over forty longhouses enclosed by a ditch, dating to the Keszthely and Zselíz phase of the culture. This settlement is one of the most extensive and most completely investigated Linear Pottery settlements. A more or less contemporary site with house remains has also been excavated at Petrivente.[211]

An early Linear Pottery settlement lying almost opposite the Budapest–Aranyhegyi út site was investigated on the outskirts of Dunakeszi, east of the Danube, during the rescue excavations preceding the construction of the M0 motorway. The pottery recovered from the settlement features, including two smaller, "*Kleinbauten*" type houses, can be assigned to the Transdanubian Linear Pottery group.[212] Two other Linear Pottery sites were also investigated during motorway constructions on the northern fringes of the Great Hungarian Plain: one of these, Füzesabony–Gubakút, yielded a series of longhouses. These new investigations clearly show that the discovery of the often 25–30 m longhouses can only be expected from the excavation of extensive areas and, also, that these two regions with the houses probably correspond to two separate early centres of neolithization.

[204] *Lenneis* (1995) 17.
[205] *Lüning* (1984); *idem* (1987).
[206] *Pavlů* (1982) 197.
[207] *Coudart* (1998) 78–91.
[208] I. M. Egry's kind personal communication. For the excavation report, cp. *Egry* (1997).
[209] *Endrődi* (1994); *Horváth* (2002c).
[210] I would here like to thank both of them for their hospitality during my visits to the excavation.
[211] L. Horváth's excavation, with N. Kalicz acting as consultant.
[212] *Horváth* (2002a); *idem* (2002b).

The contact area and even the boundary between these two early Linear Pottery settlement clusters cannot be determined from the presently available evidence. The northernmost Starčevo settlement, where Körös traits were also identified, is Donja Branjevina. However, only short descriptions and the outstanding finds from that site have been published.[213] In 1994, N. Kalicz published early Linear Pottery finds from the Fajsz and Bajaszentistván area on the left bank of the Danube.[214] In autumn 2000, we reviewed the stray finds and the finds collected during earlier field surveys between Kalocsa and Baja and interstingly enough, we found that these assemblages did not contain any Starčevo finds, while Körös sites were rather dense in the area. In addition to finds from the earliest Linear Pottery phase, we identified a large later Linear Pottery settlement at Fajsz–Garadomb. The magnetometer survey indicated that the houses had been aligned into rows, indicating a layout similar to the Balatonszárszó settlement. We also surveyed a tell settlement of the Sopot–Vinča culture in Fajsz, close to the Garadomb site. It is our hope that the research project in cooperation with Tübingen University will contribute to a better understanding of the neolithization of Transdanubia and the Great Hungarian Plain, as well as to a better knowledge of the boundary between the Neolithic communities of these two regions and the contacts between them.

Conclusions

There is an abundance of evidence on the settlement layout, the house types, construction techniques and the house use of the early Linear Pottery culture in Central Europe. The number of known Balkanic and South-East European houses has also increased owing to a number of more recent excavations. In contrast, only a few scattered bits of information are available on Mesolithic house constructions, and most of these come from more distant areas. The currently available evidence allows the following general conclusions.

It would be tempting to assume that the house building traditions of the indigenous population too played a role in the emergence of Linear Pottery house types. Unfortunately, not one single Mesolithic building has yet been found in Transdanubia. The Mesolithic houses of the Near East, South-East and Central Europe are without exception round or oval in plan. Most of them were above-ground structures or only slightly sunk into the ground. The Mesolithic buildings from Central and South-East Europe would suggest that the Mesolithic communities of Transdanubia also lived in round or slightly oval dwellings constructed on the terraces near water. It is unclear whether these buildings were sunken or above-ground structures. Is there a sound basis for assuming that sunken houses reflect an indigenous Mesolithic tradition?[215] Although this issue cannot be resolved on the basis of the currently available evidence, it seems likely that the first sedentary communities adopted the strict northern orientation of their buildings from the local population in the region extending from the northern Balkans to Lake Balaton.

The Early Neolithic houses of South-East Europe were small buildings. They were usually constructed on a square, rather than a rectangular groundplan and they lacked an internal post structure, suggesting a light roof structure. Clay was used more abundantly in house construction than wood.[216] The areas outside the houses were at least as important as the undivided intramural interior space of these houses that rarely contained a hearth.

[213] *Karmanski* (1968); *idem* (1977); *idem* (1979); *idem* (1988); *idem* (1990); *Trbuhović–Karmanski* (1993).

[214] *Kalicz* (1994a).

[215] In J. Makkay's opinion, the presence of sunken houses in the Great Hungarian Plain (for example at Szarvas) and in Transdanubia (e.g. at Bicske) is alien to the Körös and Starčevo tradition and can most likely be traced to some local tradition. *Makkay* (1982) 165.

[216] Cp. *Lenneis* (1997); *idem* (2000).

The Early Neolithic[217] (Linear Pottery) houses of Central Europe were larger, often 20 m long structures with a rectangular groundplan. The house itself formed the outer framework for the massive gable roof, supported by internal cross-rows of three and, later, five posts inside the house. In the earliest phase, these houses were single roomed, with a southern and northern part added at some later date. In spite of their large size, the interior of these houses was packed with a dense forest of posts. Many activities were performed inside the house, while extramural activates were performed in pits, many of which had some sort of protective roofing, especially in the northern part. These phenomena can primarily be explained by the climate, with cultural traditions playing a secondary role only.

The Early Neolithic houses of the regions discussed above indicate that there is nothing to indicate the existence of pit-dwellings even in the earliest phases of these settlements. The pits containing hearths and provided with some sort of roofing or protected by a screen acting as a wind-break can be interpreted as daytime activity areas, as workpits or workshops.

The distinctive features of the South-East European houses become somewhat blurred in the Danube–Drava–Sava region. The tradition of house construction branches into two separate directions slightly south of the Danube–Tisza confluence. East of the Tisza, the Körös communities followed the South-East European tradition in house construction – although it has been claimed that the Körös houses actually represent the earliest, central section of Linear Pottery houses, I have found no evidence to confirm this. In the northern and western Starčevo distribution, however, new traits, corresponding to certain features of Linear Pottery houses, make their appearance. In spite of the lack of houses on the Starčevo sites in Transdanubia, the presence of burnt daub fragments suggest that these communities lived in small or medium size above-ground houses.[218] It would appear that the central section of the Central European Linear Pottery houses evolved first. Timber played an increasingly important role in the construction of these buildings. The size of the two houses excavated at Pityerdomb, the joint use of timber and clay and the northern orientation appears to have been adopted from the pre-Linear Pottery period. The long pits flanking the longitudinal walls can first be documented at this site. We may therefore assume that Mesolithic and Starčevo influences both played a role in the emergence of Linear Pottery houses, as did the environment and the climate. According to H. Quitta, the Linear Pottery house can be regarded as a local innovation, evolving as a result of contact with the Balkanic Neolithic.[219] This shrewd argument, first formulated in 1958, is wholly acceptable, although the archaeological record shows that the Linear Pottery house evolved more to the south, in the central areas of Transdanubia, rather than in Moravia as originally suggested by Quitta.

The architectural features whose origins can be traced to the northwestern Balkans and southern Transdanubia are the following: the strict northern orientation, the heavy roof structure, the "*Längsgrube*" and the stamped clay floor without a wooden subframe ("*ploshchadki*"). These are the features typical for Linear Pottery houses. As a result, the Linear Pottery house could hardly have evolved in the contact zone between the South-East European and the western house building tradition or especially to its south, but neither could it have evolved in an area that did not border on the northern fringes of the Starčevo distribution or to its north.

The above overview reveals that the Central European Linear Pottery house flanked by the "*Längsgrube*" evolved somewhere between the Drava and Rába Rivers, perhaps in the hilly region by the western shore of Lake Balaton.

[217] I have already noted in the introduction to this study that – similarly to other prehistorians – I use the label Early Neolithic for the heritage of the earliest food-producing communities, irrespective of their absolute age.

[218] *Kalicz* (1993) 87.

[219] *Quitta* (1971).

The longhouse, a new variant of above-ground houses built around a timber frame with wattling, appeared on the northern fringes of the Körös and Starčevo distribution in the later phase of these two cultures. The currently known houses of the Szatmár II period were not flanked by "*Längsgrube*"; in contrast, these pits were a standard feature of the two houses uncovered at Pityerdomb in western Transdanubia. The Central European examples quoted above clearly show that this house type spread westward and northward and that it decisively influenced the architecture of the ensuing one and a half millennia. It is possible that the interaction between the population of Transdanubia and the Great Hungarian Plain influenced development in both regions. Unfortunately, there is as yet little evidence for contact between the two in the northern Bácska, one of the possible contact regions. Therefore, recent research projects have been aimed at clarifying this problem. The northern orientation and the idea of the above-ground structure can be regarded as a possibly Mesolithic tradition, even if farming communities did not consciously adopt these elements from the indigenous population; it may rather have evolved during the long period of contact between the two. At the same time we know that the construction of Mesolithic buildings did not involve the use of large amounts of daub. The circular and oval houses, the most common house forms of the Mesolithic, disappeared with the spread of Neolithic lifeways.

In sum we may say that the Central European house developed from the house construction traditions of the local Mesolithic communities and the Neolithic houses of the western Balkanic region. Both traditions included above-ground buildings. The massive roof structure, the "*Längsgrube*" and the strict northern orientation can either be attributed to Mesolithic influences or was a joint innovation resulting from the contact between the two populations. Climatic factors undoubtedly played a role (roof structure, the increased importance of timber as a building material, the partial roofing of the work-pits), as did other, cultural and social traditions (orientation).

Although the above outline of the possible origins of the Linear Pottery longhouse contains a number of hypothetical elements, one point emerges quite clearly. It has been suggested in relation to the Mesolithic buildings in the Danube Gorges that a change in architectural elements reflects a change in the cultural identity of the given community.[220] Although I regard this observation highly relevant, it seems to me that in this case we are witnessing the exact opposite. No matter to what extent the above suggestion on the origins of Linear Pottery longhouse will be confirmed or rejected, there can be no doubt that its emergence marked the birth of a community's identity – irrespective of where and when this house type first appeared – and that this cultural identity was to a large extent reflected in the conservative architectural elements of the Linear Pottery communities from the Vistula to the Rhine, from Magdeburg to Hódmezővásárhely for many centuries. Moreover, the Late Neolithic groups of Central Europe and the Carpathian Basin, developing on a Linear Pottery basis and no doubt indicating the survival of the Linear Pottery population, continued this tradition.

The claim that the survival of this strict canon had a symbolic meaning and greatly contributed to determining group identity is perhaps not an exaggeration: members of this community built houses of this type – and communities who built this type of house were members of this group and not another. This is a rare example of how a cultural element reflecting a nascent cultural identity survived for long centuries. The material culture of the Linear Pottery communities no doubt contained a number of similar, but probably less conspicuous, though equally important symbolic elements.

[220] *Radovanović* (1996) 41.

Chapter 4

SZENTGYÖRGYVÖLGY–PITYERDOMB. DESCRIPTION OF THE SETTLEMENT FEATURES AND THE POTTERY FINDS

TRENCH I *(Fig. 9.)*

A total of 253 pottery fragments and 52 burnt daub fragments (2.1 kg) were recovered from the upper layer of Trench I (0–22–25 cm). Inventoried finds: 7 thin-walled body sherds, 3 polished, red slipped fragments, 21 storage jar fragments.[1]

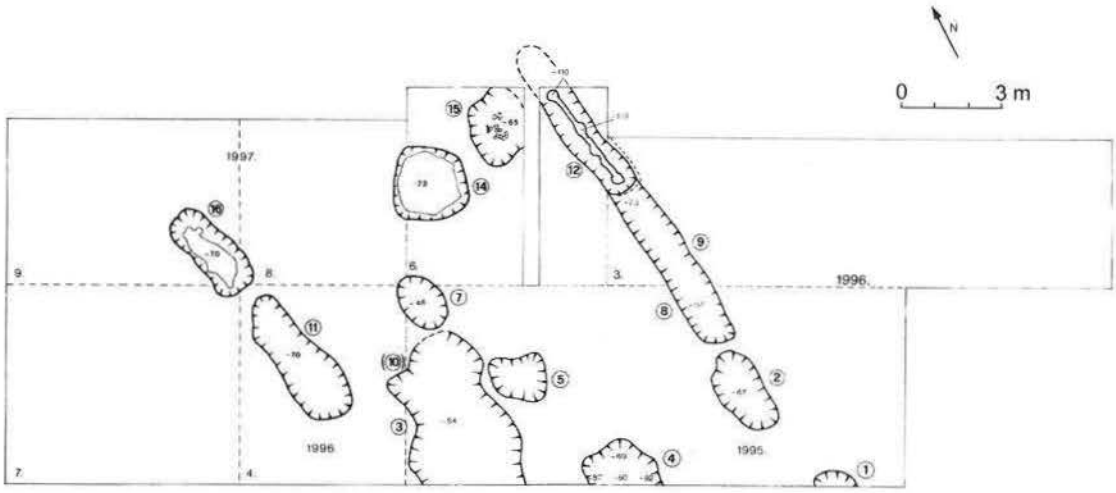


Fig. 9. Features of Trench I

Feature 1

We excavated about one-half of the oval, burnt patch extending into the trench in its southeastern end, about 130 cm from the trench wall. The roughly 1 m long feature was interpreted as a hearth. Its contemporaneity with the settlement is uncertain since only a few indistinct sherds tempered with chaff and sand were recovered from it. These pottery sherds excluded a dating to the Copper Age and suggested that it was probably co-eval with the other settlement features. It later became clear that a residential building stood some 1.5 m from this hearth. Feature 1 was probably an open-air hearth in the yard of the house.

Finds

9 body fragments from a storage jar tempered with chaff and sand.

[1] Inv. no. 93.100.1–4; 93.101.5–13; 93.102.1.9.

Feature 2 *(Fig. 10)*

North–south oriented oval pit. 240 cm x 30 cm. Average depth 54 cm with a 72 cm deep rectangular depression with rounded corners in its centre. Fill: a 20 cm thick humus layer under the present surface, under which lay a uniform, strongly burnt ashy layer mixed with strongly burnt charcoal, large red burnt daub fragments and a high number of finds. The finds were not concentrated to one particular part or depth of the pit.

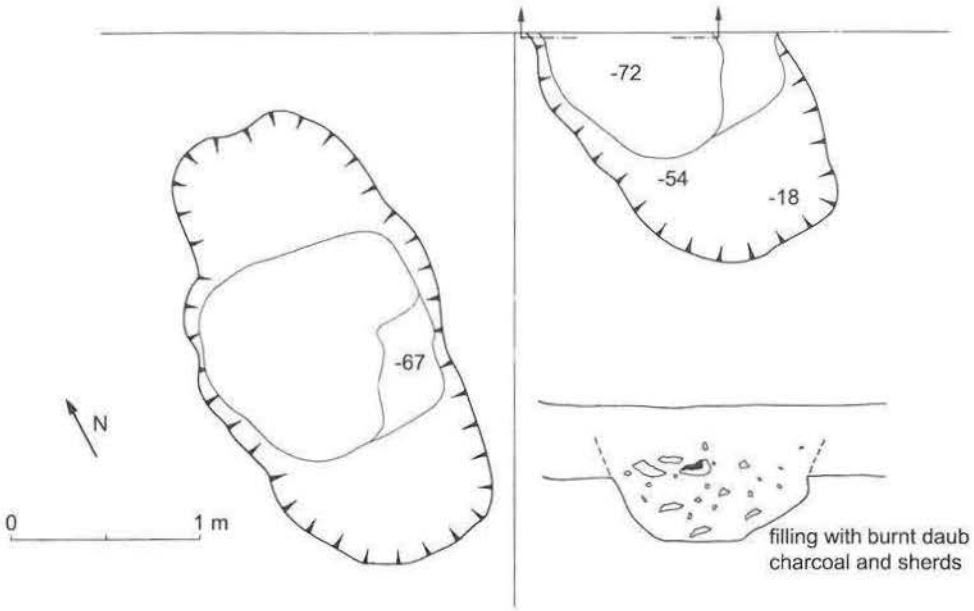


Fig. 10. Feature 2

Finds[2] *(Figs 11–15)*

A total of 795 pottery sherds, some chipped stone implements,[3] 2 grinding stones and 12 burnt daub fragments (0.67 kg) were recovered from this feature.

Inventoried finds: 111 rim fragments from large, globular storage jars, 39 knob decorated body sherds, 33 thin-walled body sherds covered with a polished, dark red slip, 14 decorated sherds (finger impressions, one with a double knob, two with linear patterns, five with Schlickwurf ornamentation) and 14 fragments from pedestalled vessels.[4]

1. Rim fragment. Light red, tempered with chaff and sand, from a thick-walled, poorly fired, globular vessel with inturned rim, decorated with a row of finger impressions under the rim.
2. Rim fragment. Light red, tempered with chaff and sand, from a hemispherical vessel. Rim diam.: 23 cm.
3. Fragment of a pedestalled vessel. Dark red, tempered with chaff and sand, covered with a polished, dark red slip (worn surface), from the hemispherical upper part of a chalice shaped pedestalled vessel.

[2] Inv. no. 93.103.1–54. It must here be noted that the numbering of the more noteworthy finds from each feature presented in the figures corresponds to the numbering in the descriptions. However, the numerical sequence occasionally had to be abandoned for the sake of arranging the finds on the figures, this being the reason that the numbering of the individual items shown in the figures does not always follow the numerical sequence.

[3] The stone implements will be clustered and analysed by K. T. Biró – *T. Biró* (in press).

[4] Inv. no. 93.103.32– 93.103.52.

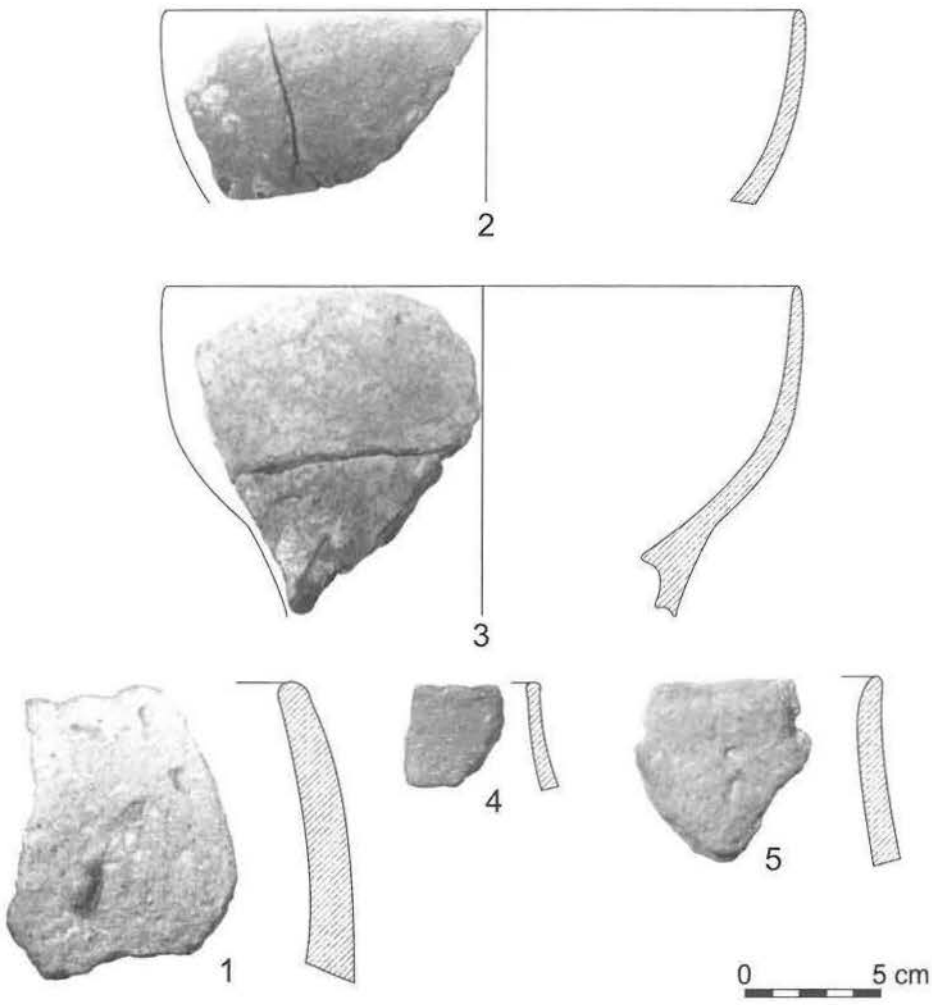


Fig. 11. Finds from Feature 2

4. Rim fragment. Red, tempered with chaff and sand, from a vessel with slightly inturned rim, decorated with a row of finger impressions.
5. Rim fragment. Light red, tempered with chaff and sand, from a thick-walled, cylindrical pot with slightly indrawn neck.
6. Rim fragment. Dark red, tempered with chaff and sand, porous fabric, from a large, thick-walled vessel with inturned rim. Rim diam.: 24 cm.
7. Rim fragment. Dark red, tempered with chaff and sand, from a pot with inturned rim. Rim diam.: 12 cm.
8. Base fragment. Light red with grey patches, tempered with chaff, sand and crushed pottery. From a poorly fired storage jar with worn surface. Base diam.: 10.5 cm.
9. Rim fragment. Red, tempered with sand, from a deep bowl with smoothed surface.
10. Rim fragment. Red, tempered with chaff and sand, from a small vessel with polished surface, decorated with lightly incised oblique lines under the rim. Rim diam.: 9 cm.
11. Rim fragment. Red, tempered with a little chaff, sand and a little crushed pottery, from a large storage jar.
12. Rim fragment. Red, tempered with sand, from a well-fired, thin-walled, cylindrical bowl with polished surface. Rim diam.: 34 cm.
13. Fragment of a pedestalled bowl. Light yellow, tempered with chaff and sand, from a low pedestal.
14. Rim fragment. Red, tempered with sand, from a slightly globular bowl with polished surface.

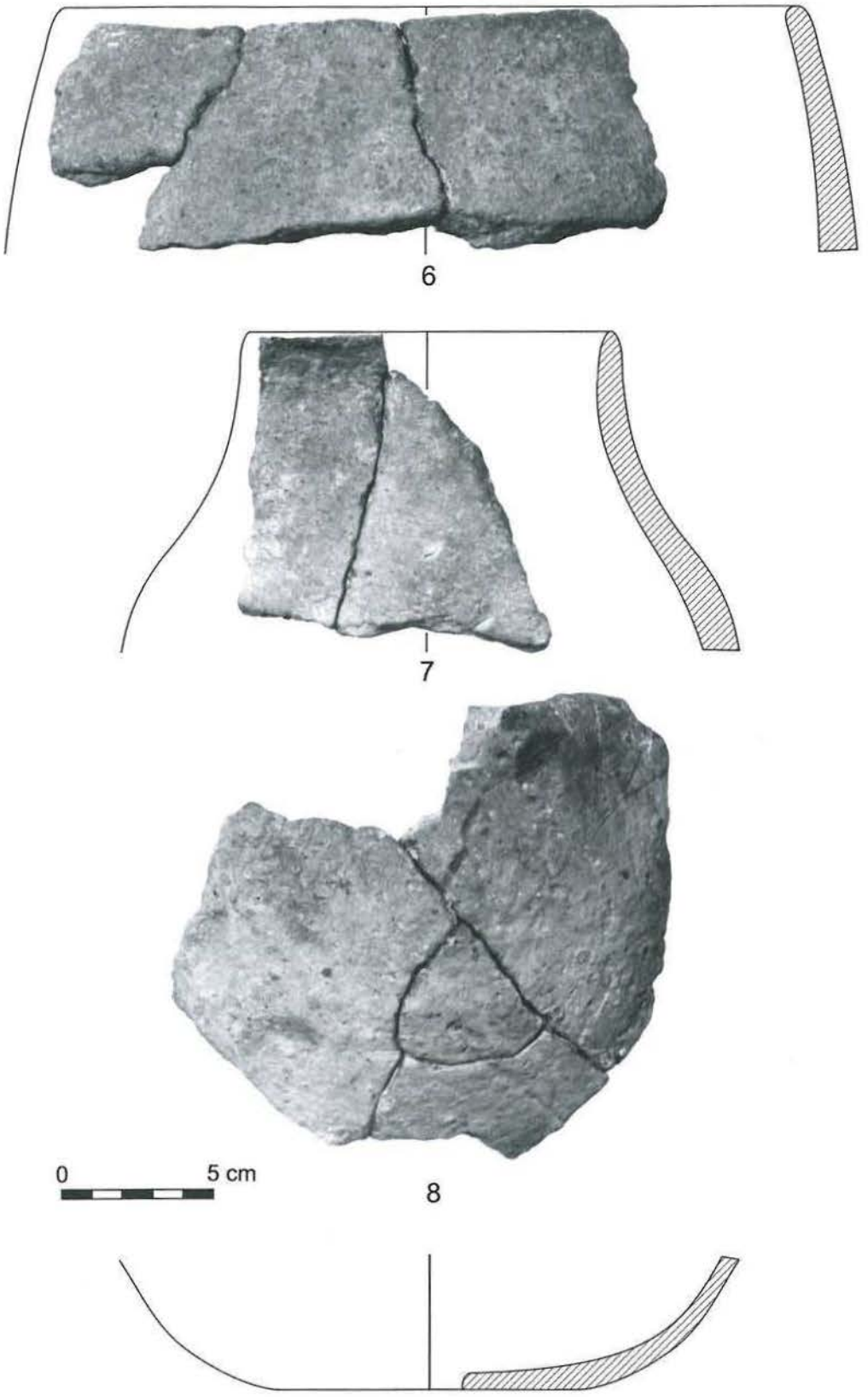


Fig. 12. Finds from Feature 2

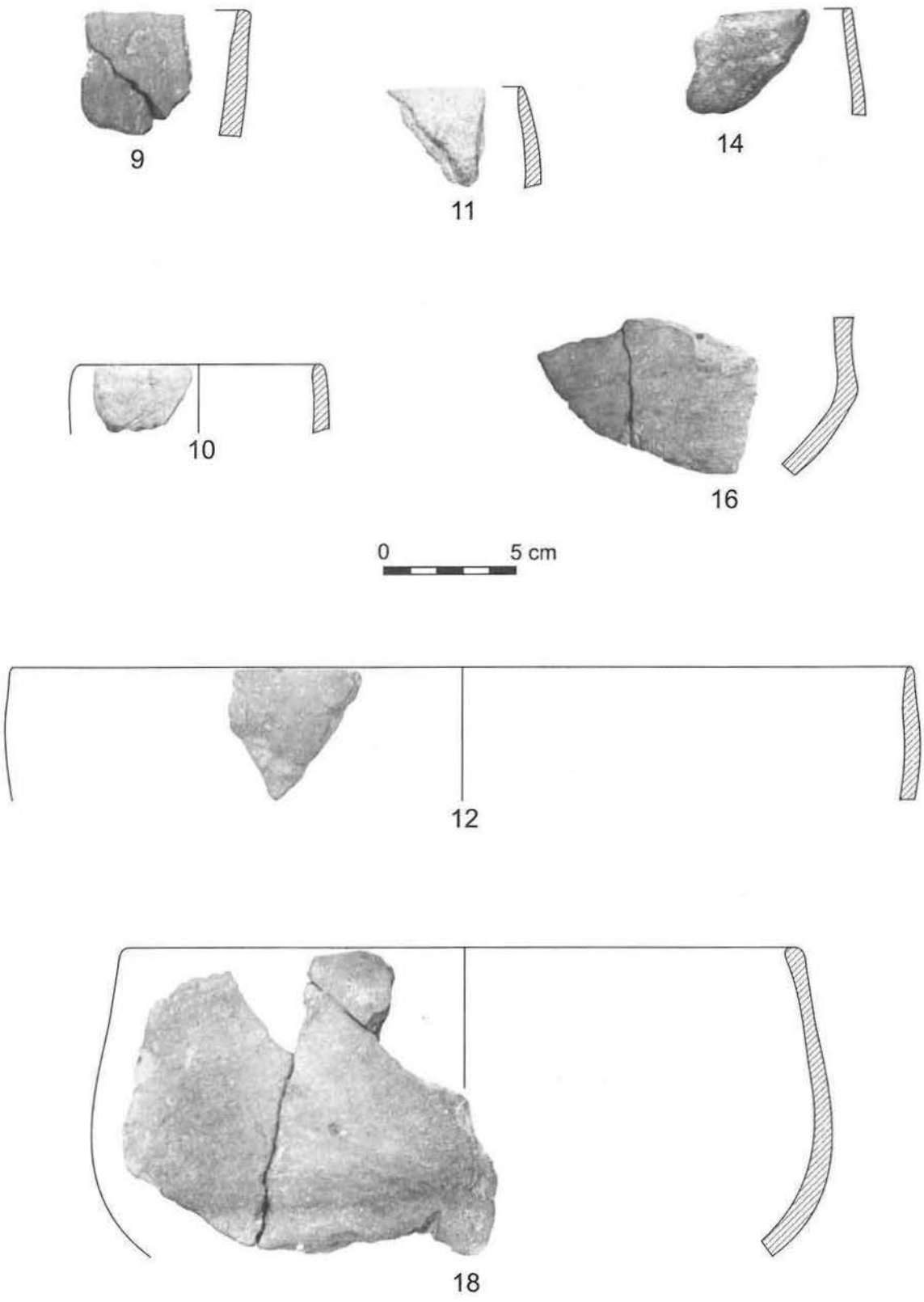


Fig. 13. Finds from Feature 2

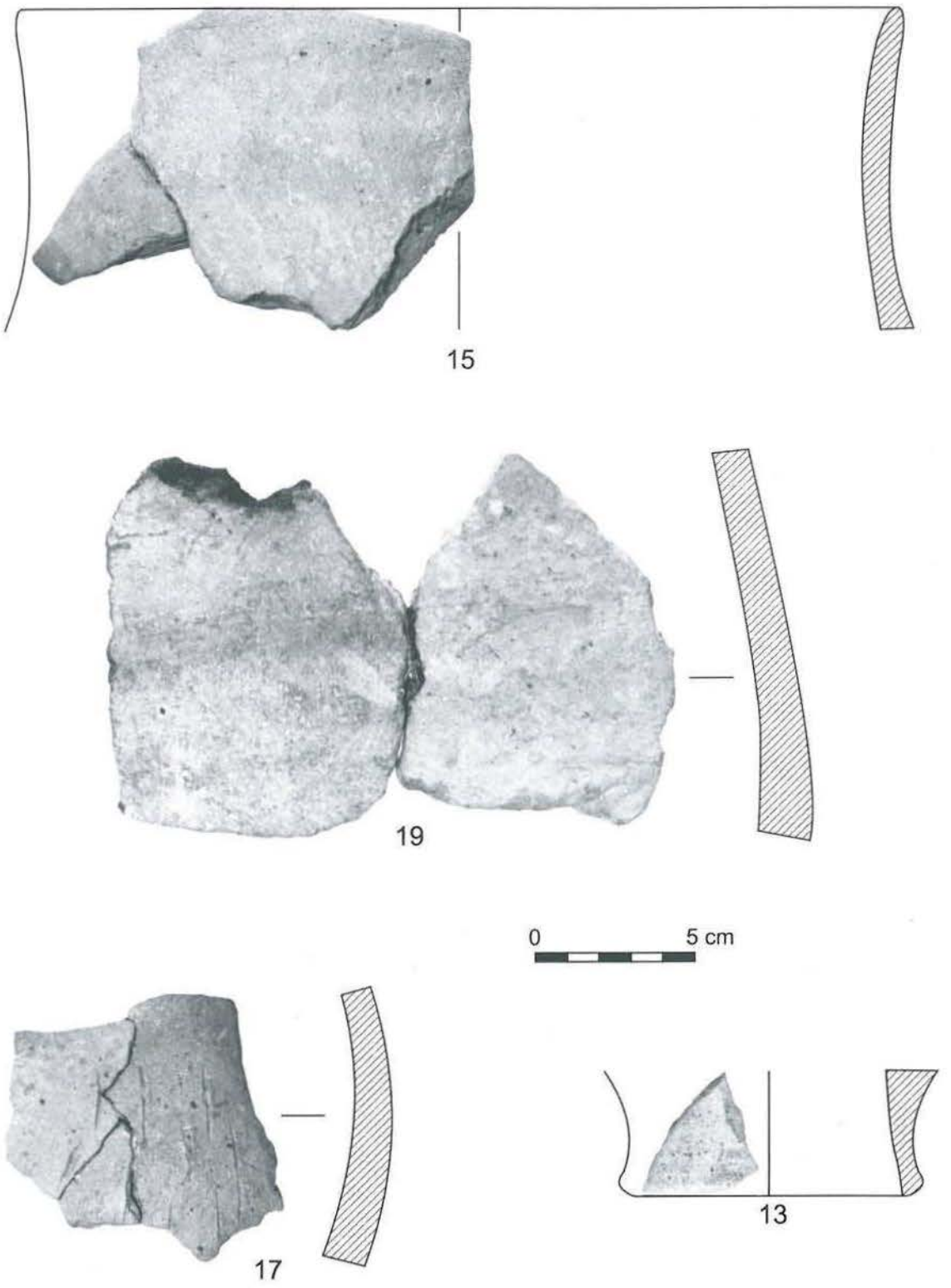
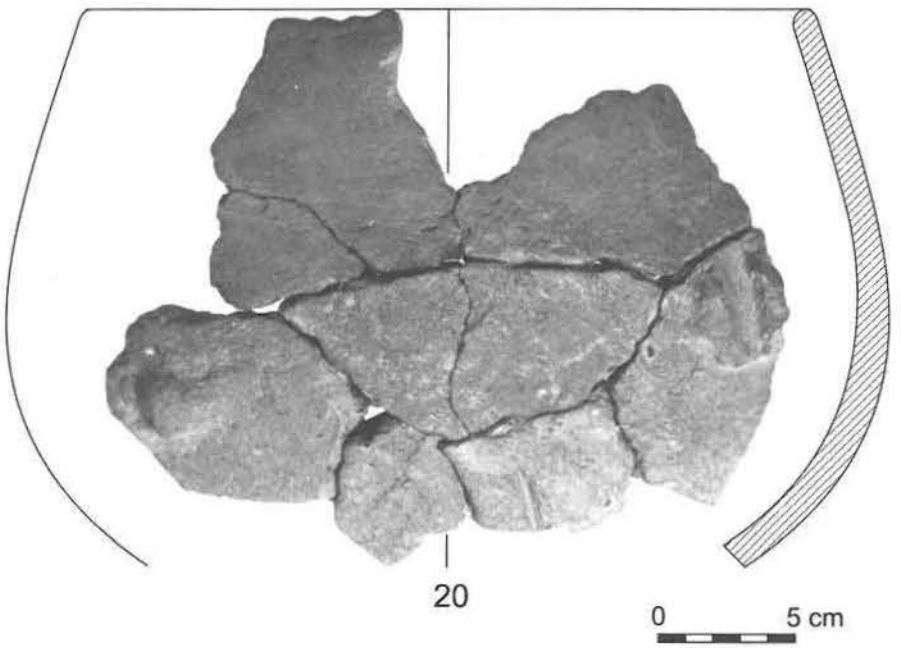
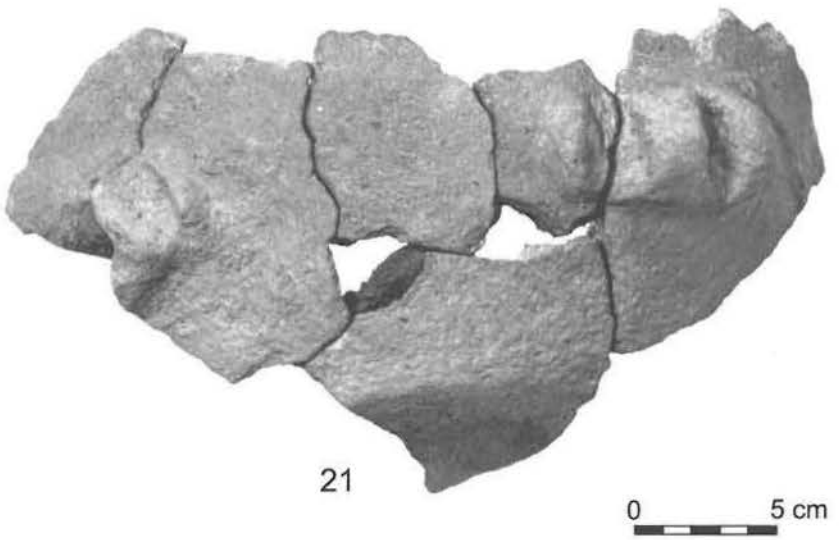


Fig. 14. Finds from Feature 2





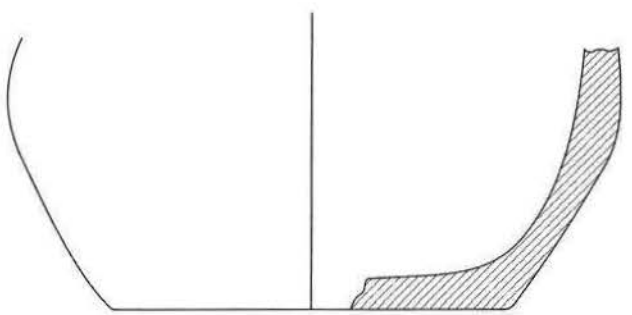


Fig. 15. Finds from Feature 2

15. Rim fragment. Red, tempered with chaff and sand, from a well-fired storage jar with slightly constricted neck and outturned rim. Rim diam.: 30 cm.
16. Body sherd. Red, tempered with sand, from a polished biconical bowl with a marked carination. The upper part is incurving.
17. Body sherd. Red, tempered with sand, from the lower part of a globular storage jar decorated with an incised pattern of short stabs ('rain pattern').
18. Vessel profile. Dark red, tempered with sand, from a globular, gourd shaped vessel. Rim diam.: 25 cm.
19. Body sherd. Red, tempered with chaff, from the belly of a thick-walled, poorly made, large storage jar.
20. Bowl profile. Yellowish-red, tempered with chaff and a little crushed pottery, from a deep bowl with inturned rim; its wall thickness increases towards the base. Rim diam.: 22 cm.
21. Base fragment. Yellowish-red, tempered with chaff, from the lower part of a thick-walled, globular storage jar, decorated with a large, vertically set triple lug handle. One of the sherds from this vessel was found in feature 3.

Feature 3 *(Fig. 16)*

A long, amorphous, shallow pit or depression, covering almost the entire western part of Trench I, oriented to the north. The upper layer mixed with charcoal and large burnt daub fragments was followed by a hard, greyish, granular layer at a depth of 50–55 cm that was interpreted as an occupation surface on the basis of the horizontal position of the finds lying on it. The finds also included an idol head. Below this occupation surface was a layer devoid of any finds down to a depth of 60 cm, although in one spot it reached to a depth of 84 cm. The latter may have been a posthole, although it must in all fairness be noted that we did not observe other depressions that could be interpreted as postholes lying either crosswise (*Querjoch*) or parallel to the long wall of the house.

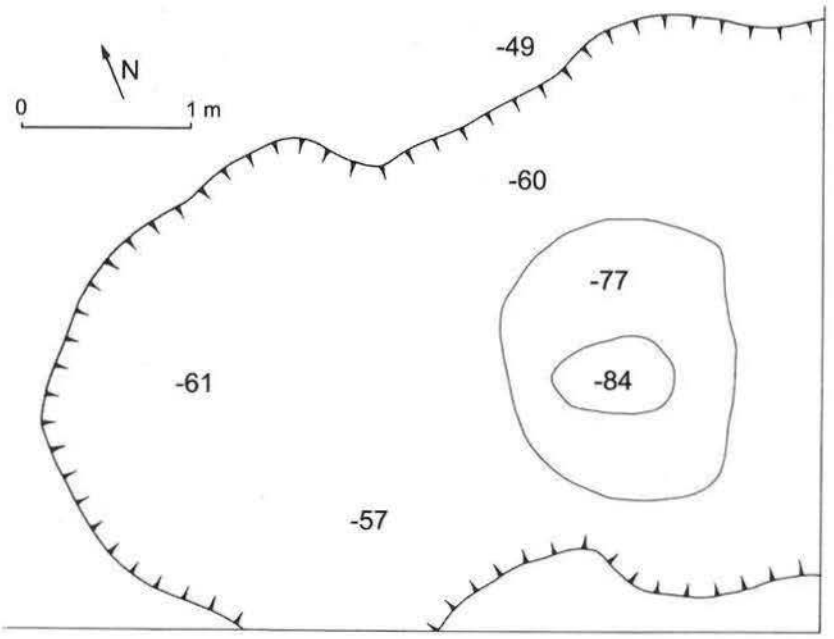


Fig. 16. Feature 3

Finds[5] *(Figs 17–18)*

A total of 744 pottery sherds, some chipped stone implements and 32 burnt daub fragments were recovered from this feature. Inventoried pieces: 1 fragment decorated with a linear pattern, 13 fragments with a polished, dark red slip, 22 fragments with Schlickwurf, 9 fragments with a carination, 2 pedestal fragments, the rest from thick-walled storage jars.

1. Body sherd. Red, tempered with sand, from a slightly biconical deep bowl covered with a polished, dark red slip. Rim diam.: 20.5 cm.
2. Body sherd. Yellow, tempered with sand, from a strongly biconical, thick-walled vessel, decorated with a row of pinched decoration on the carination line.
3. Body sherd. Dark red, tempered with sand, from the shoulder of a large vessel made from finely levigated clay, ornamented with deeply incised lines.
4. Body sherd. Bright red, tempered with chaff, from the belly of a large storage jar with uneven surface, decorated with a large horizontal handle on the carination.
5. Body sherd. Yellowish-brown, tempered with chaff, from the belly of a poorly fired, large storage jar.
6. Body sherd. Reddish-brown, tempered with chaff and sand, from a hemispherical bowl with uneven surface made from poorly levigated clay, with a slight carination under the rim.
7. Idol head. Light yellowish-red, tempered with chaff, made from poorly levigated clay and poorly fired. An oblique incision on the rather badly preserved cylindrical surface probably marks the contour of the face. Small clay globules can be noted on the other side. The latter recall the idol from Bicske–Galagonyás, even if it is more poorly executed, and suggest that these globules perhaps depicted the coiffure. H.: 4.5 cm, average th.: 2.5 cm.

Feature 4 *(Fig. 19)*

We could only uncover about one-half of the amorphous pit in the southern end of Trench I since its southern part fell into the tree covered area flanking the road. The virgin soil lay at a depth of 35–37 cm under the contemporary surface. The burnt debris of feature 4 lay a little above the virgin soil: greyish-black granular soil mixed with larger daub fragments, followed by a grey, mixed clayey layer, sloping from east to west and containing numerous finds. There were three round, deep intrusions in the 65–69 cm deep pit; these reached to a depth of 92 cm. These three intrusions may be interpreted as postholes. One of them extended under the trench wall and can be seen on the drawing of the section. Their fill contained charred wood, probably the remains of the one-time upright timbers. Samples of the charred wood remains were submitted to analysis for determining their species; however, no samples were submitted to radiocarbon analysis since they were probably old specimens whose ^{14}C date would probably be older than the age of the settlement by several hundred years.

Finds[6] *(Figs 20–21)*

A total of 63 pottery fragments and some chipped stone implements were recovered from this feature.

1. Rim fragment. Reddish-brown, tempered with chaff and sand, the profile of a gourd shaped vessel, decorated with a row of pinched decoration along the rim. Rim diam.: 19 cm.
2. Rim fragment. Light red, tempered with chaff, the profile of a gourd shaped vessel with porous surface. Rim diam.: 24 cm.

[5] Inv. no. 93.104.1–18; 93.110.1.

[6] Inv. no. 93.105.1–11.

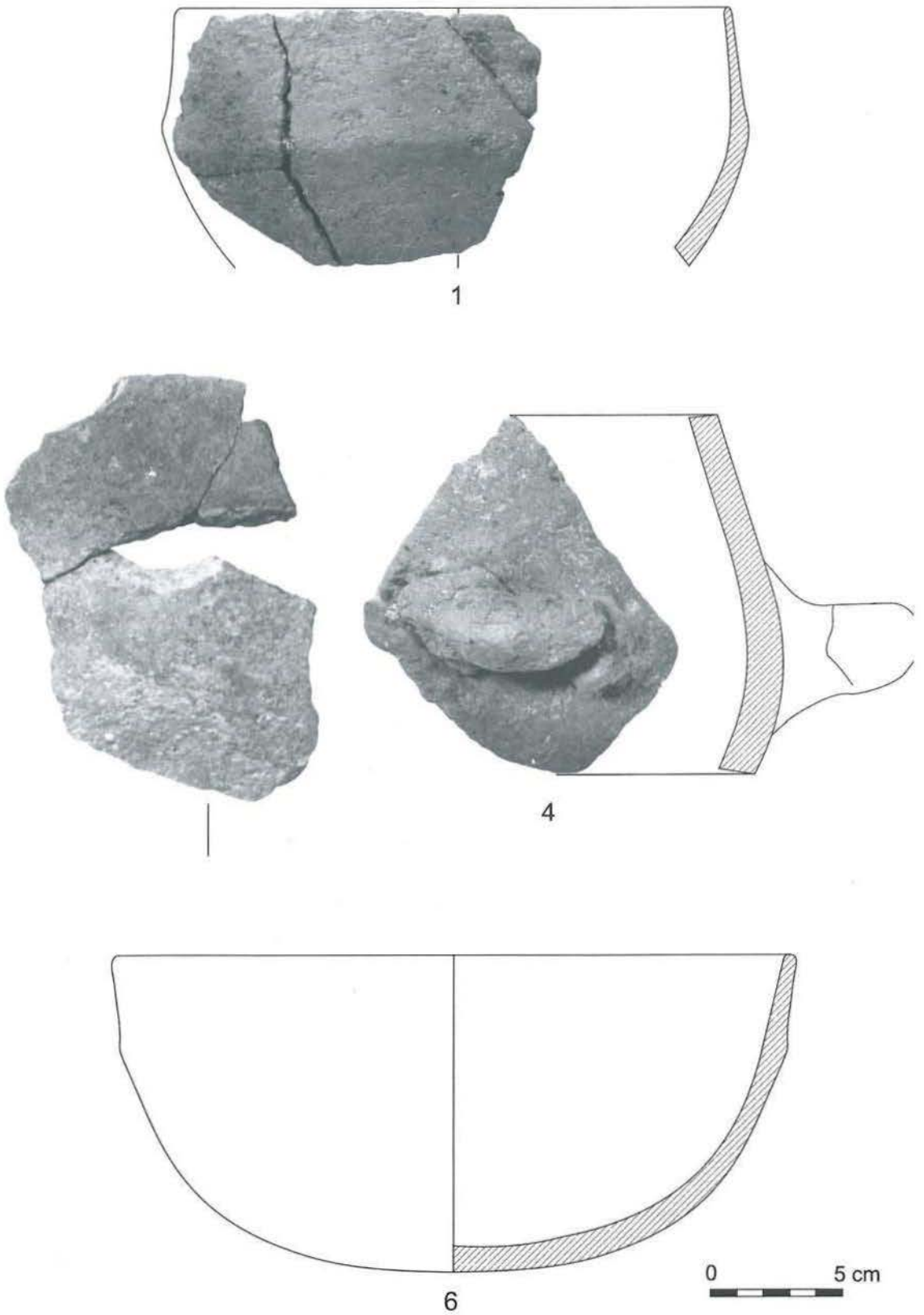


Fig. 17. Finds from Feature 3

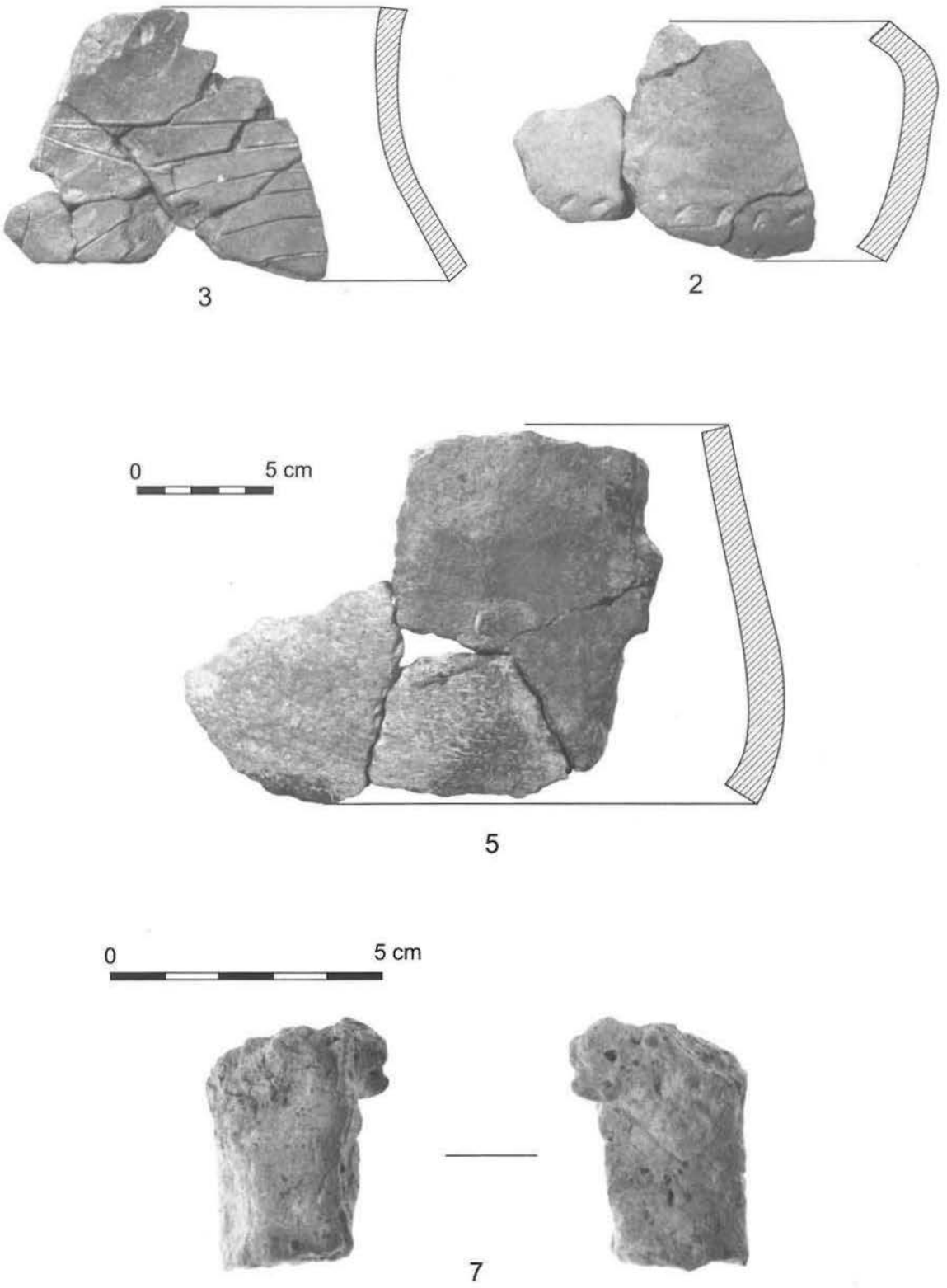


Fig. 18. Finds from Feature 3

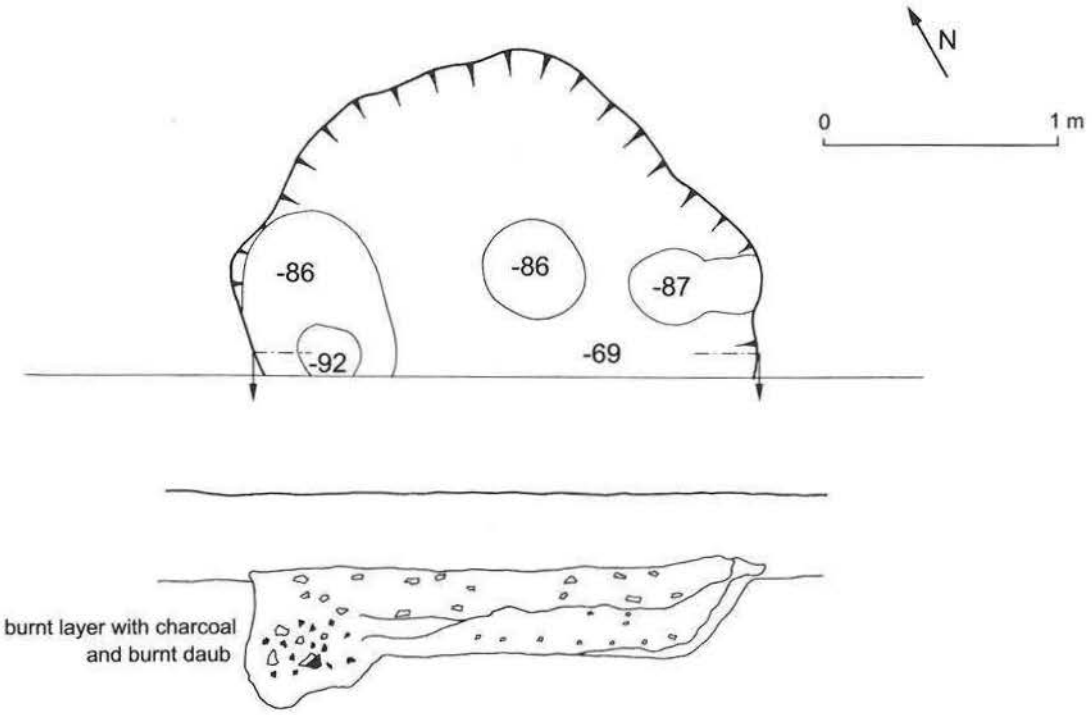


Fig. 19. Feature 4

3. Body sherd. Red, tempered with sand, from a carinated bowl covered with a polished, dark red slip. Rim diam.: 32 cm.
4. Rim fragment. Red, tempered with chaff and sand, from a rounded, gourd shaped vessel with inturned rim. Rim diam.: 15.5 cm.
5. Pedestalled vessel. Greyish-brown, tempered with chaff and sand, from a thin-walled, low, pedestalled vessel with a rather worn surface (assembled from its fragments).

Feature 5

Shallow, irregular, round pit with a diameter of c. 160 cm and an average depth of 58–63 cm. Underneath the mixed layer covered with charcoal and burnt daub fragments lay a hard-packed, greyish, granular layer that was interpreted as an occupation surface in view of the horizontal position of the finds scattered over it. This layer was found at a depth of 50–55 cm.

Finds[7]

A total of 48 burnt daub fragments, 277 pottery fragments, some stone implements and 1 grinding stone were recovered from this feature.

The worn pottery sherds included 5 fragments from pedestalled vessels, 72 fragments from thin-walled, smaller vessels with polished surface, the rest came from plain, poorly fired, thick-walled storage jars decorated with handles and lugs.

[7] Inv. no. 93.106.1.

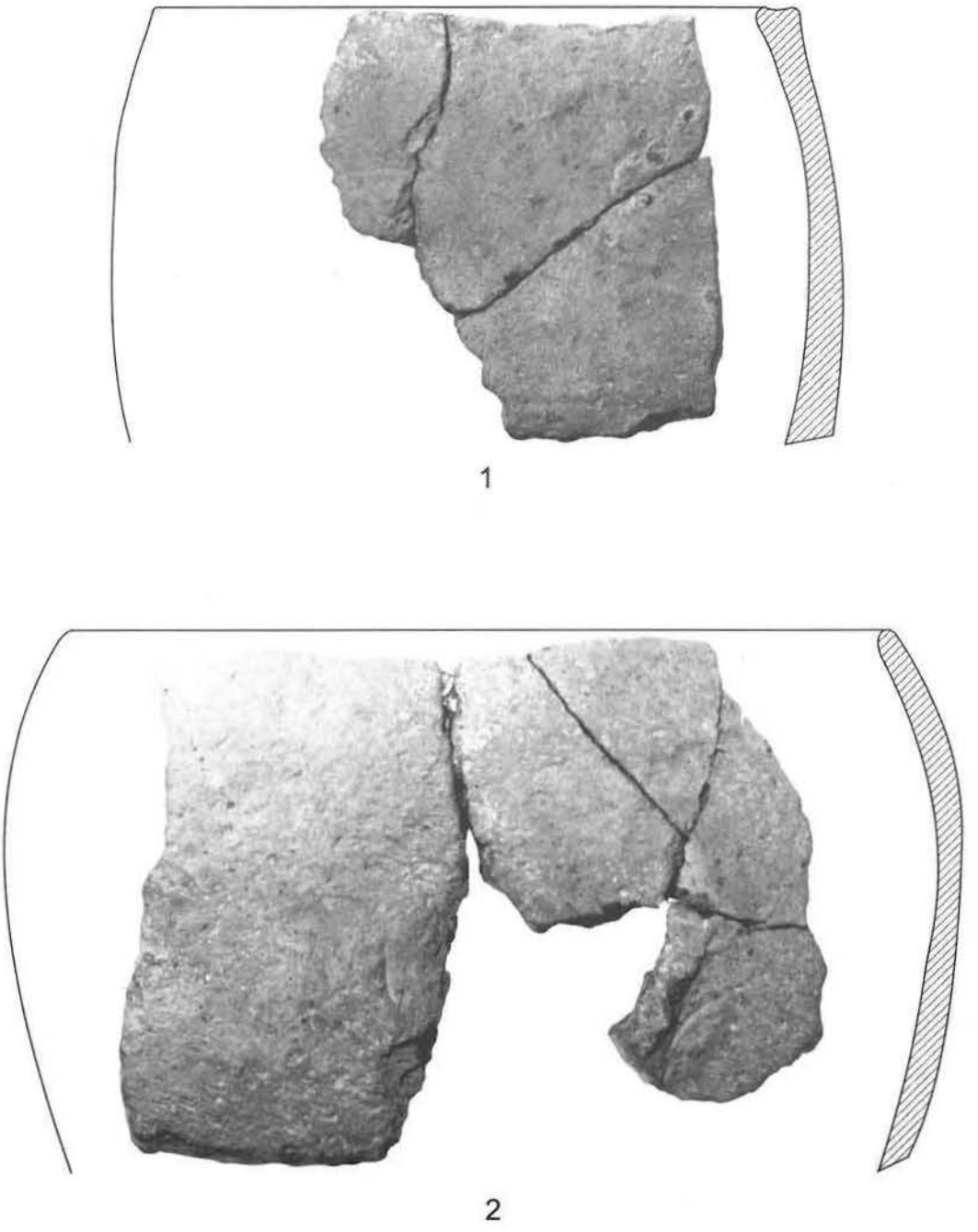


Fig. 20. Finds from Feature 4

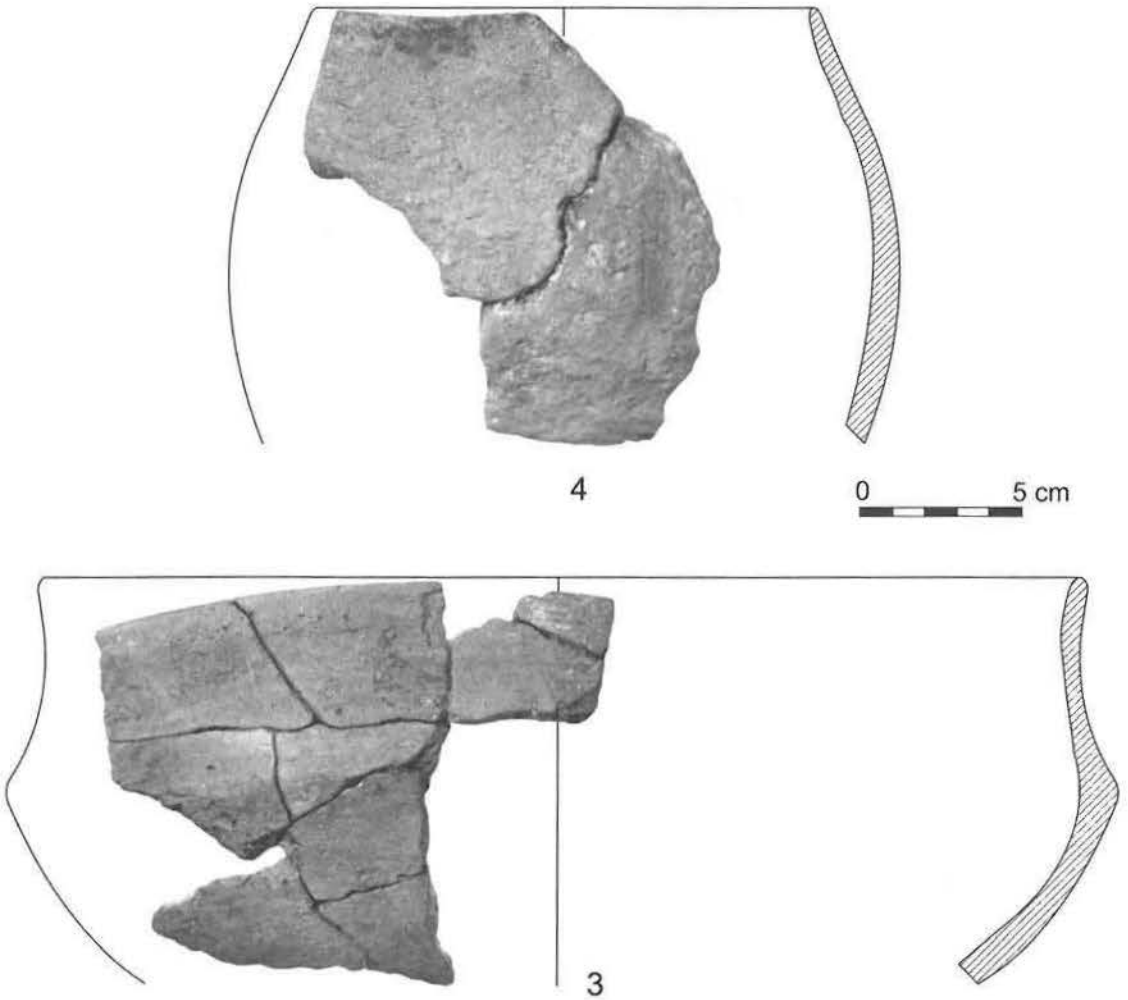


Fig. 21. Finds from Feature 4

Feature 6

A smaller depression beside feature 5; it became clear after its clearing that it was not a separate feature, but an unevenness in the occupation surface.

Finds

A total of 4 pottery fragments were recovered from this feature.

Feature 7 *(Fig. 22)*

A shallow depression adjoining the northern end of Feature 3, slightly shallower (48 cm) than the average depth of Feature 3. Underneath the mixed layer covered with larger burnt daub fragments lay a uniform, hard-packed, grey, granular layer containing charcoal and various finds at a depth of 36–44 cm.

Finds[8] *(Fig. 23)*

A total of 25 burnt daub fragments and 176 pottery fragments were recovered from this feature.

[8] Inv. no. 93.107.1–4.

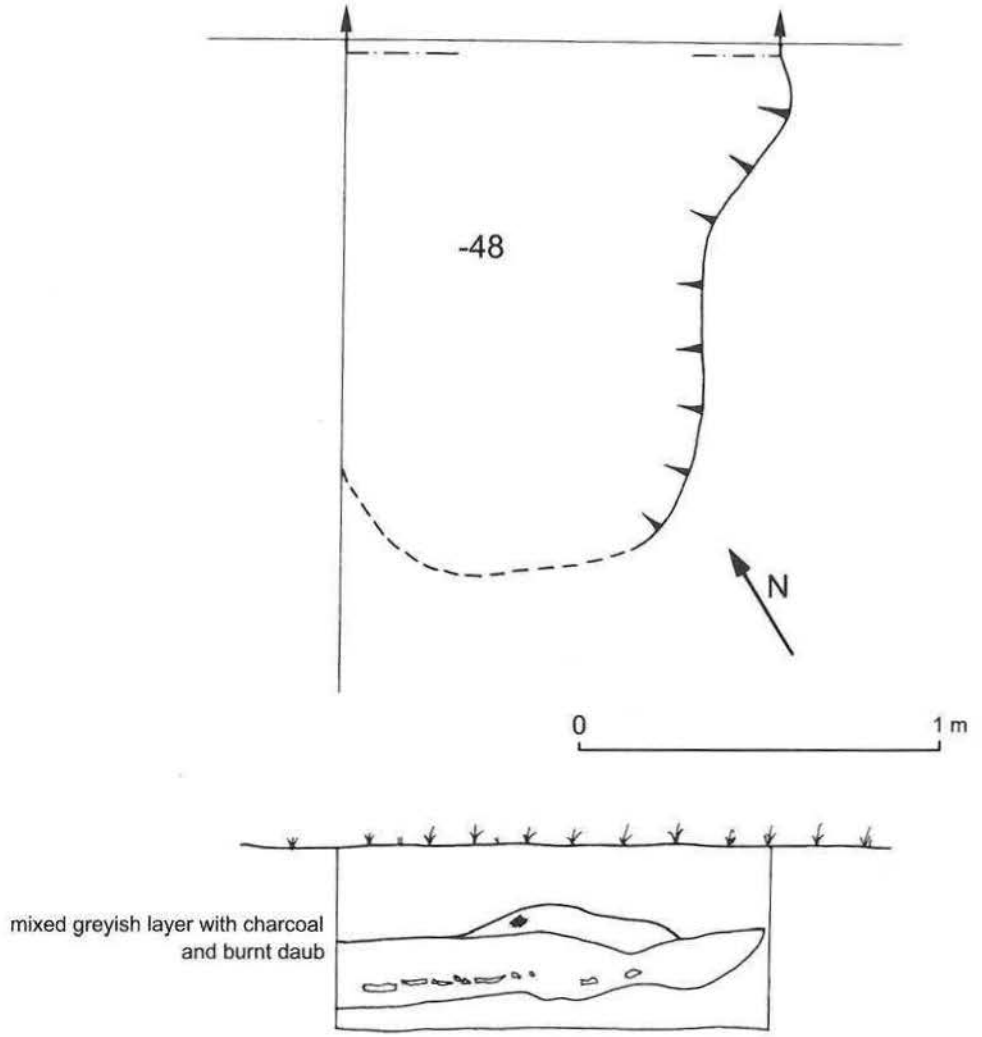


Fig. 22. Feature 7

1. Rim fragment. Red, tempered with chaff and sand, from a poorly fired, polished bowl with inturned rim made from poorly levigated clay, decorated with a pointed knob under the rim. The originally polished surface is now worn, the breakage surface shows a "sandwich" core . Rim diam.: 28 cm.
2. Base fragment. Red, tempered with chaff and sand, from a poorly fired, large storage jar. Base diam.: 13.5 cm.

Feature 8 *(Fig. 24)*

A deep oval pit northwest of Feature 2, almost contiguous with it and having the same orientation. A mixed layer with charcoal covered with large pieces of burnt daub and very few finds lay at a depth of 22 cm under the upper humus layer. The area covered with the burnt daub fragments almost completely covered the underlying mixed layer. The bright reddish-black, hard-burnt daub fragments indicate a rather intensive conflagration. At a depth of 36–38 cm we found a grey fill with large pieces of charcoal and a few fairly intact vessels and stone implements. The layer under the burnt daub fragments also contained a number of smaller pottery sherds. Finds also lay on the pit floor, at a depth of 92 cm.

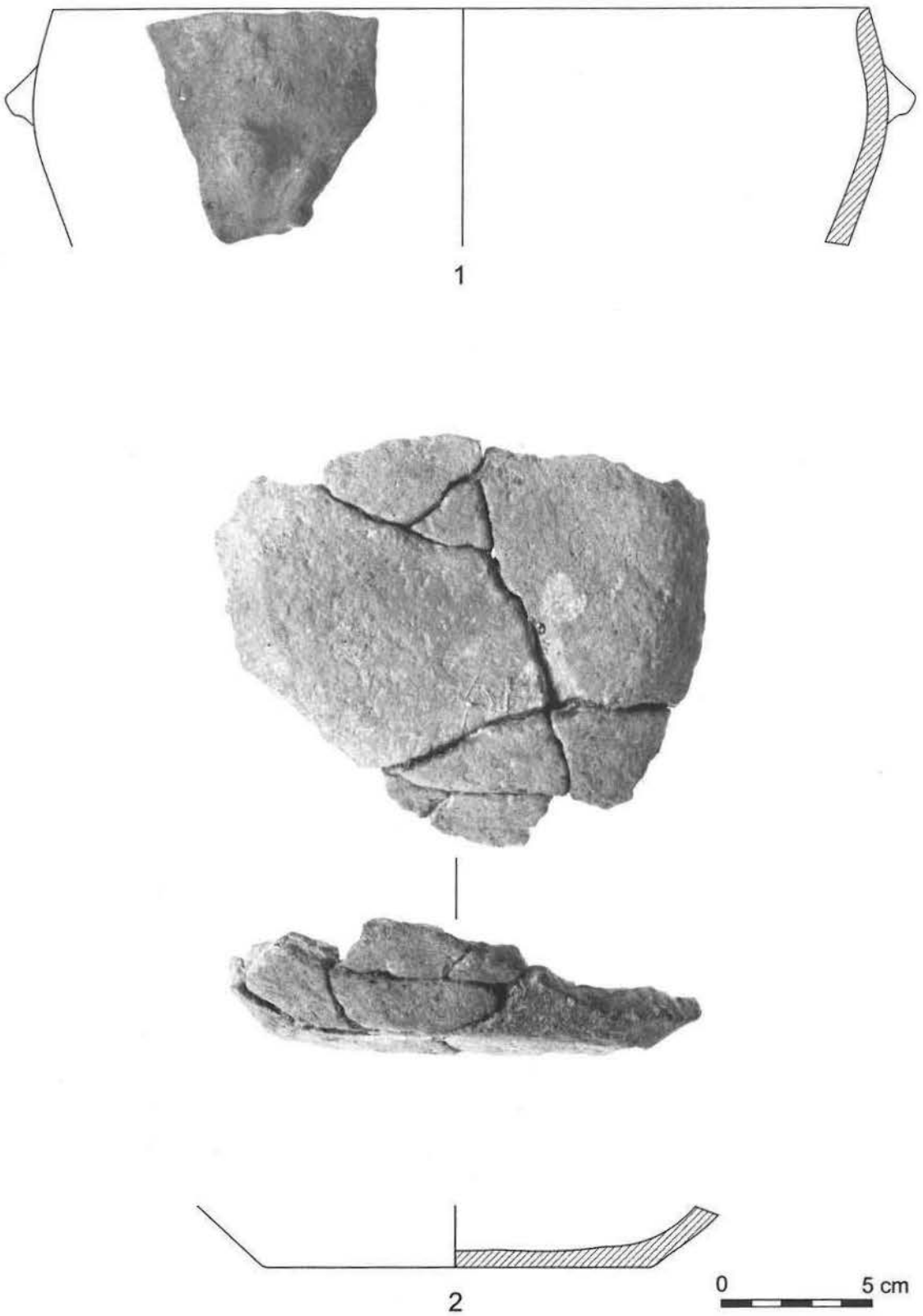


Fig. 23. Finds from Feature 7

Finds[9] (Figs 25–26)

A total of 321 pottery fragments, some chipped stone implements, 1 grinding stone and 90 burnt daub fragments (4.8 kg) were recovered from this feature.

1. Rim and body fragment. Red, tempered with chaff and sand, from an S profiled bowl. Rim diam.: 25 cm.
2. Bowl assembled from its fragments. Bright red, thick-walled bowl tempered with chaff and sand, with a slightly asymmetric mouth, decorated with a finger impressed knob. Rim diam.: 11.5 cm.
3. Pedestalled vessel. Reddish-yellow vessel with a low, conical pedestal, tempered with chaff and sand. Pedestal diam. (lower end): 7 cm.
4. Mug assembled from its fragments. Greyish-brown, poorly fired, slightly asymmetric mug, tempered with chaff and sand, made from poorly levigated clay. Its uneven, porous surface is covered with incisions arranged into a rain pattern. A row of finger impressions and pinched decoration runs along the rim, the sides are ornamented with two finger impressed knobs. Rim diam.: 17 cm.
5. Bowl assembled from its fragments. Poorly preserved, bright red, slightly asymmetrical bowl with inturned rim and porous surface, tempered with chaff and sand, decorated with a tripartite horizontally set knob. Rim diam.: 12 cm.
6. Bowl assembled from its fragments. Bright red, poorly fired, hemispherical bowl, tempered with chaff, decorated with a row of finger impressions along the rim and a finger impressed knob on the belly.

Feature 9 *(Fig. 27)*

A continuation of Feature 8, differing from it only in depth. The roughly 3 m long, oval, deep pit was oriented precisely to the north. Below the upper humus, at a depth of 22 cm, we found a mixed layer with charcoal containing few finds and covered with burnt daub fragments. The area covered by the burnt daub fragments almost completely concealed the underlying mixed layer. The bright reddish-black, hard burnt daub fragments indicate a rather intensive conflagration. The *in situ* position of the burnt daub fragments is shown by the fact that they all faced the same direction, indicating how they had fallen onto the pit. Underneath the daub fragments, at a depth of 56–58 cm, we found a greyish fill mixed with large charcoal fragments and a conspicuously high number of stone implements. The number of pottery fragments was also noteworthy; some of them lay in a horizontal position on top of the hard packed, greyish, granular layer. The layer under the burnt daub fragments also yielded many smaller body sherds. The next fill layer was almost completely devoid of finds, except for a few organic matters and tiny charcoal fragments. The floor of the pit lay at a depth of 76–80 cm.

Finds[10] (Figs 28–30)

A total of 552 pottery fragments, some chipped stone implements, 1 grinding stone and 65 burnt daub fragments (1.75 kg), 14 with twig imprints on one side, were recovered from this feature.

1. Rim fragment. Tempered with chaff and sand, from a well-fired, conical cup polished both on its exterior and interior, made from finely levigated clay. Wall th.: 0.6 cm.
2. Rim and body fragment. Tempered with chaff and sand, "sandwich" core, from a hemispherical bowl covered with a polished, dark red slip both on its exterior and interior. One part is secondarily burnt. Rim diam.: 27 cm, wall th.: 0.5–0.7 cm.
3. Rim and body fragment. Tempered with chaff and sand, "sandwich" core, from a yellowish cream coloured biconical bowl with incurving upper part, polished both on its exterior and interior. Rim diam.: 22 cm.

[9] Inv. no. 93.108.1–13.

[10] Inv. no. 93.11.1–35.

4. Rim fragment. Tempered with chaff and sand, from a conical, wide mouthed bowl, covered with a polished, dark red slip both on its exterior and interior. The fragment is secondarily burnt. Rim diam.: 36 cm.
5. Rim and body fragment. Tempered with chaff and sand, "sandwich" core, from a biconical bowl with a concave upper part, polished both on its exterior and interior, with a rounded, slightly conical knob on the carination. Rim diam.: 19 cm, wall th.: 0.3–0.9 cm.
6. Rim and body fragment. Light reddish-brown, tempered with chaff and sand, "sandwich" core, from a wide mouthed, biconical bowl with a slight carination, polished both on its exterior and interior. Rim diam.: 37 cm.
7. Rim fragment. Red, tempered with chaff and sand, from a deep bowl with worn surface, originally covered with a polished, deep red slip both on its exterior and interior. Wall th.: 0.3–0.6 cm.
8. Body fragment. Dark red, tempered with chaff and sand, from a globular vessel, polished both on its exterior and interior, decorated with two deeply incised oblique lines.
9. Rim fragment. Tempered with chaff and sand, "sandwich" core, from a biconical bowl with incurving upper part, covered with a polished, dark red slip both on its exterior and interior. Wall th.: 0.4–0.6 cm.
10. Lug handle, decorated with three finger impressions. Red, tempered with chaff and sand, from a larger storage jar.

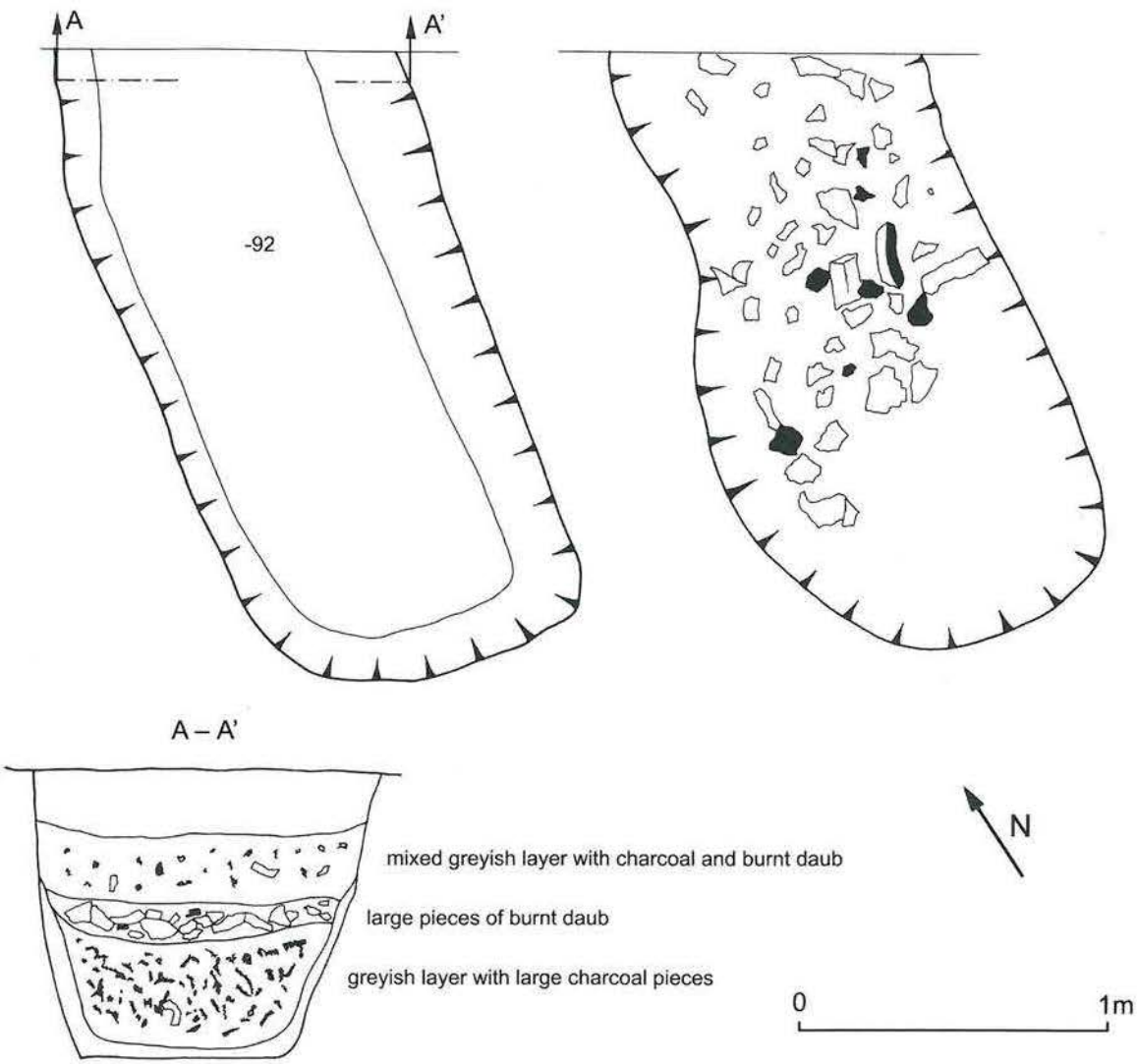


Fig. 24. Feature 8

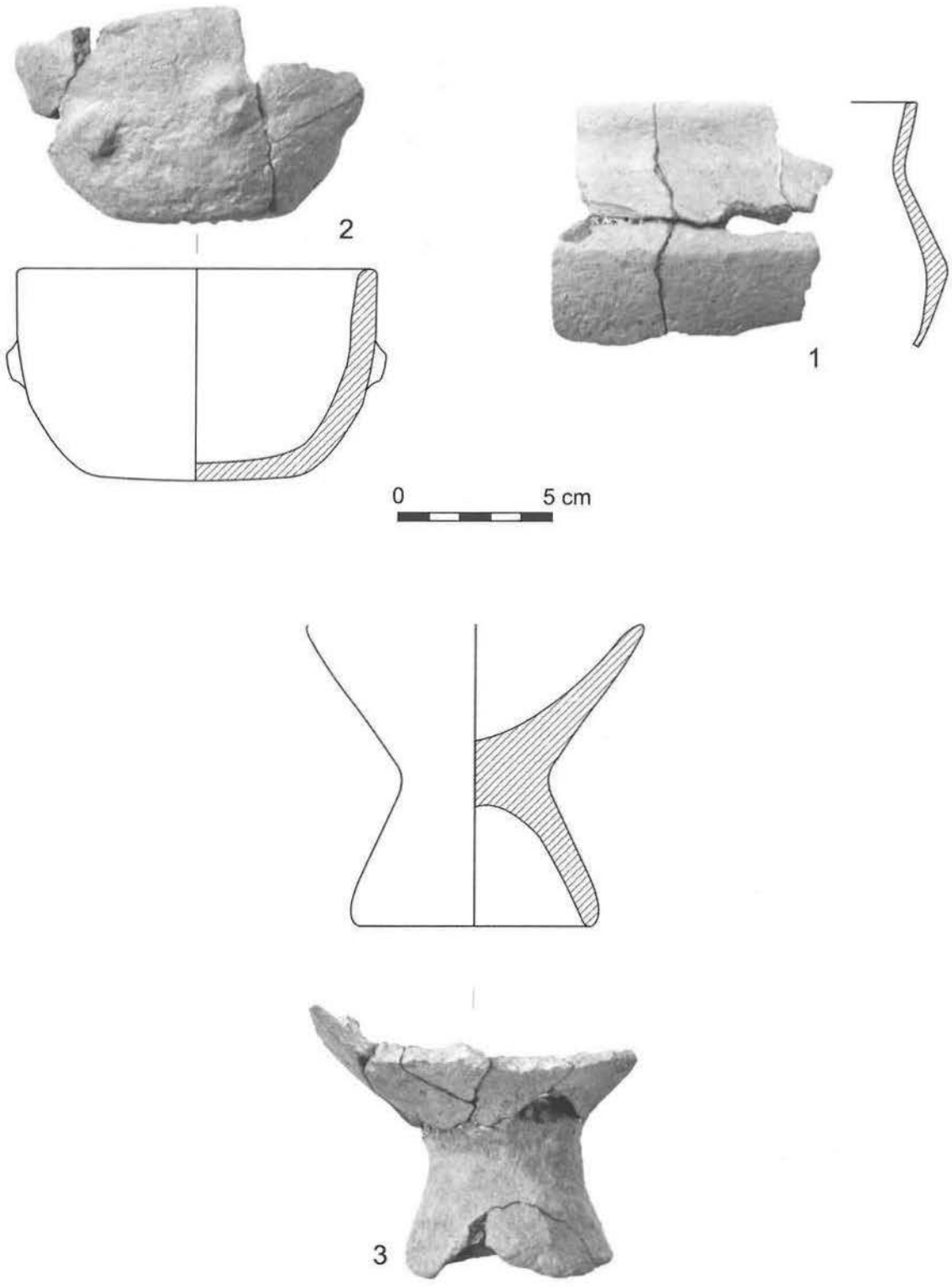


Fig. 25. Finds from Feature 8

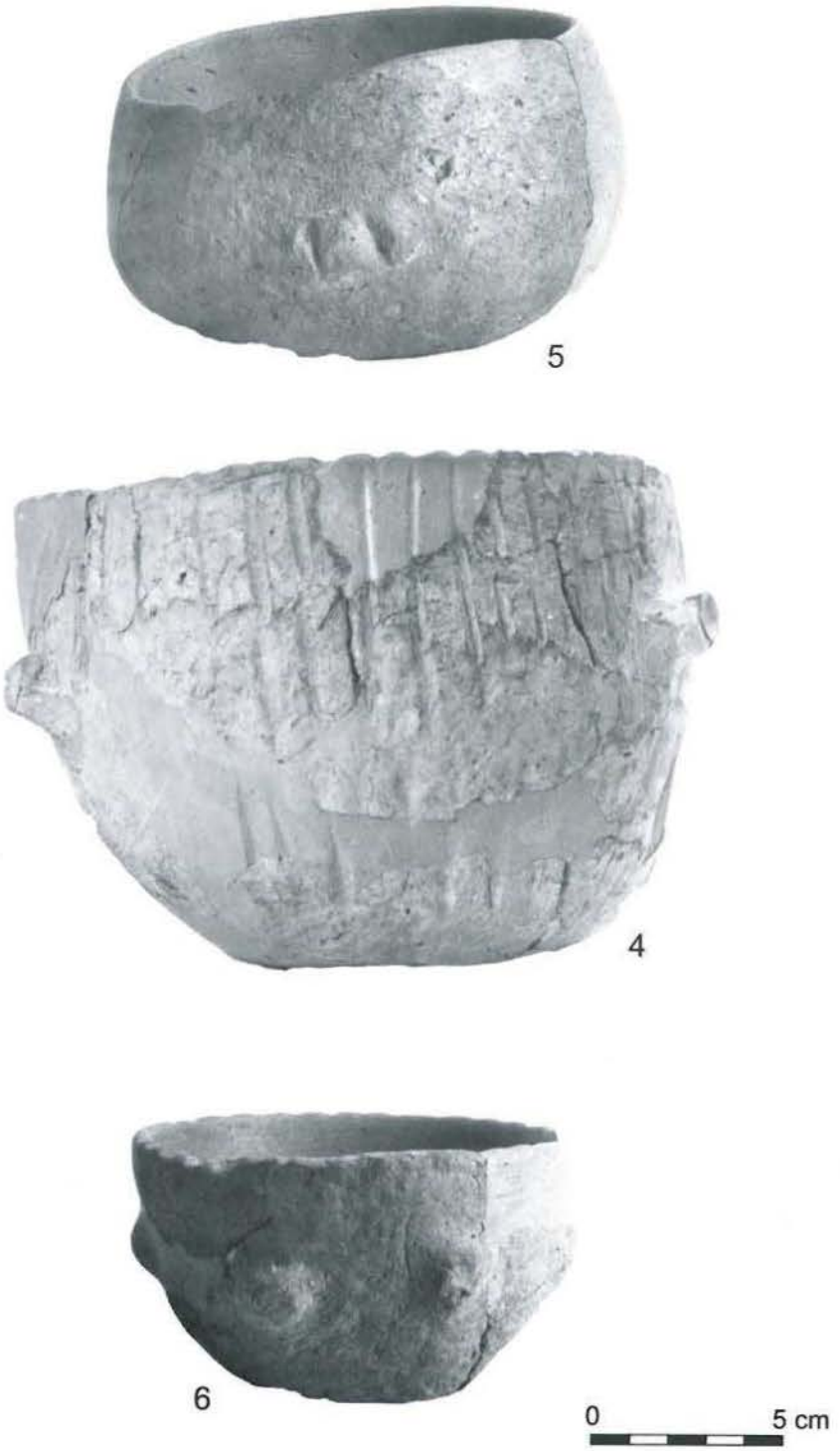


Fig. 26. Finds from Feature 8

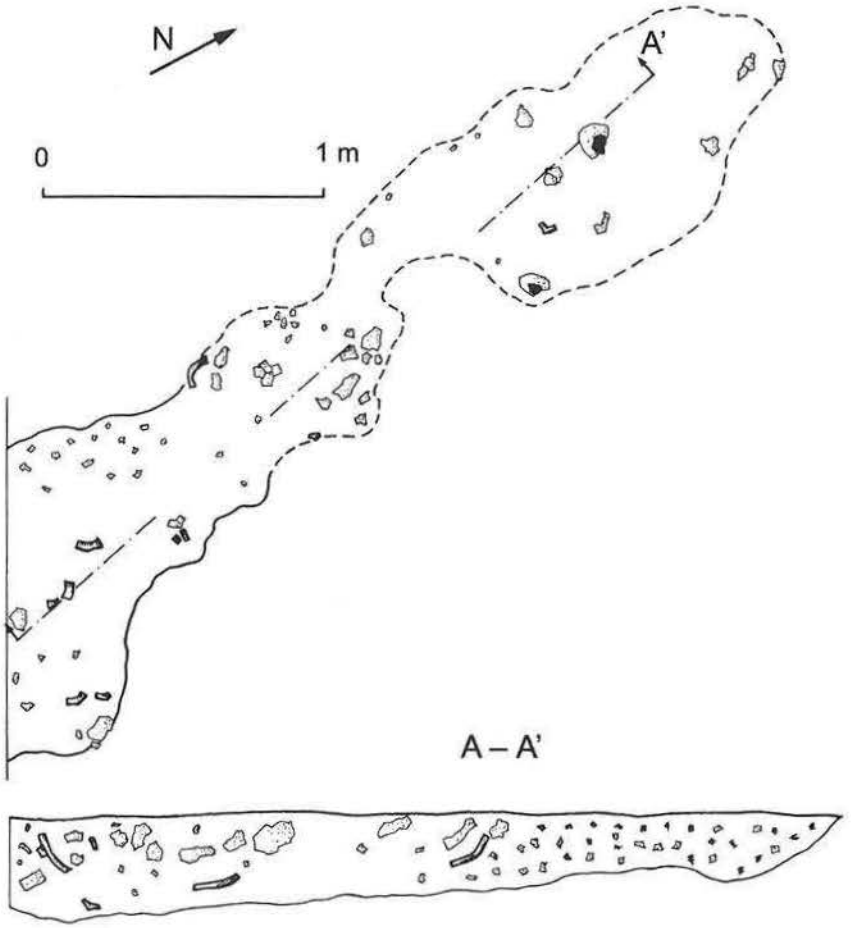


Fig. 27. Feature 9

11. Handle fragment. Tempered with chaff and sand, made from finely levigated clay, well-fired, smoothed on both sides, decorated with two wide, lightly incised vertical lines.
12. Body fragment. Tempered with chaff and sand, "sandwich" core, from a storage jar with worn surface, decorated with a finger impressed knob. Wall th.: 0.9–1.0 cm.
13. Body fragment. Red with greyish patches, tempered with chaff and sand, from a poorly fired vessel with worn surface, made from poorly levigated clay and decorated with a lug handle. Wall th.: 1.1–1.3 cm.
14. Body fragment. Dark red, tempered with chaff and sand, from the belly of a slightly globular vessel. Wall th.: 0.3–0.5 cm.
15. Body fragment. Light red, tempered with chaff and sand, "sandwich" core, from a large storage jar with a large lug handle. Wall th.: 0.3–0.5 cm.
16. Body fragment. Light red, tempered with chaff and sand, "sandwich" core, from a poorly fired, thick-walled storage jar, made from poorly levigated clay, decorated with a finger impressed, vertically set lug handle.
17. Body fragment. Dark red, tempered with chaff and sand, "sandwich" core, from the vessel part of a pedestalled bowl, covered with a polished, dark red slip both on its exterior and interior. Wall th.: 1.1–1.3 cm.
18. Body fragment. Red, tempered with chaff and sand, from a large pot made from finely levigated clay, covered with a polished, dark red slip both on its exterior and interior. The slip is well preserved on the exterior.

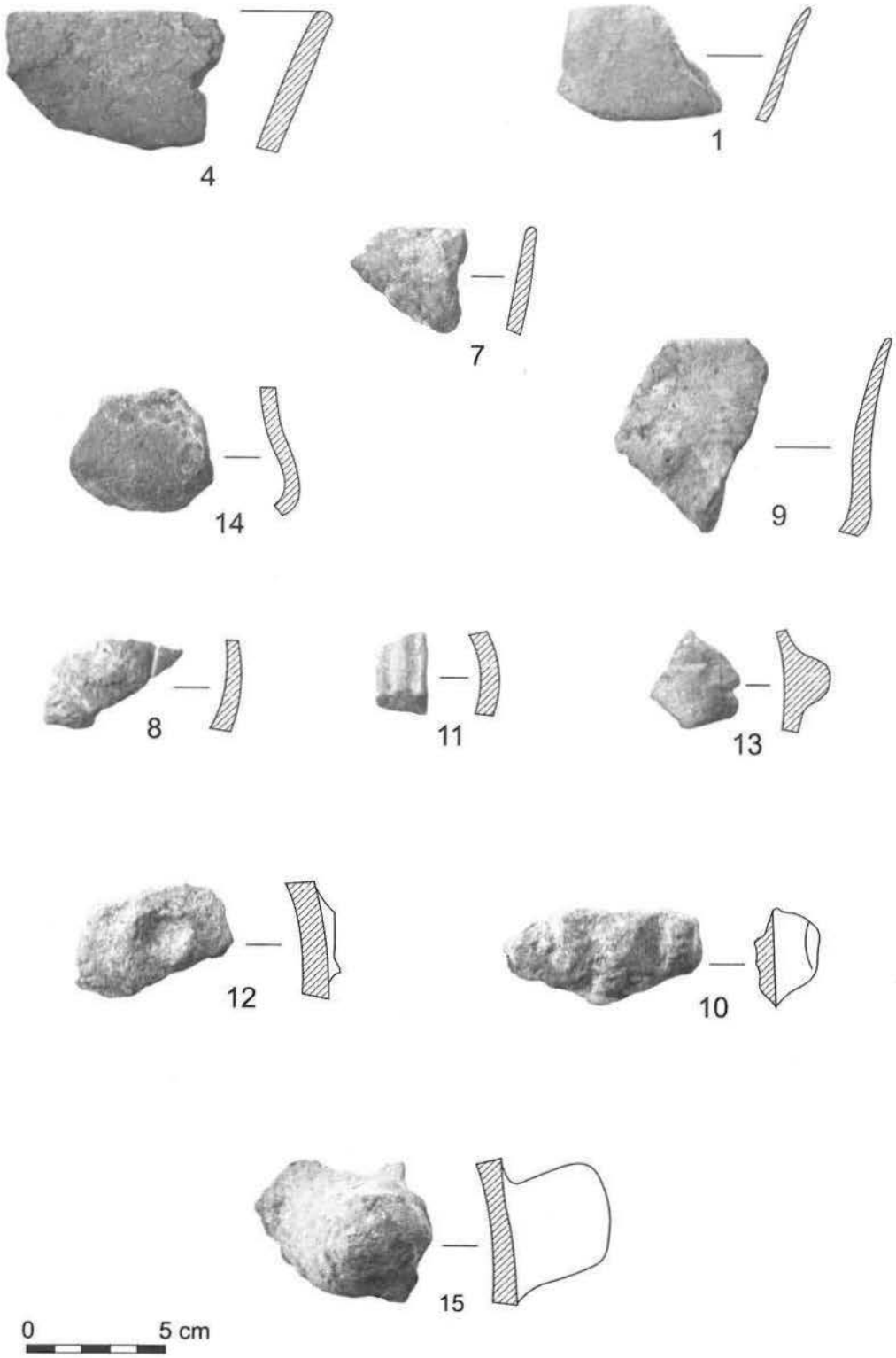


Fig. 28. Finds from Feature 9

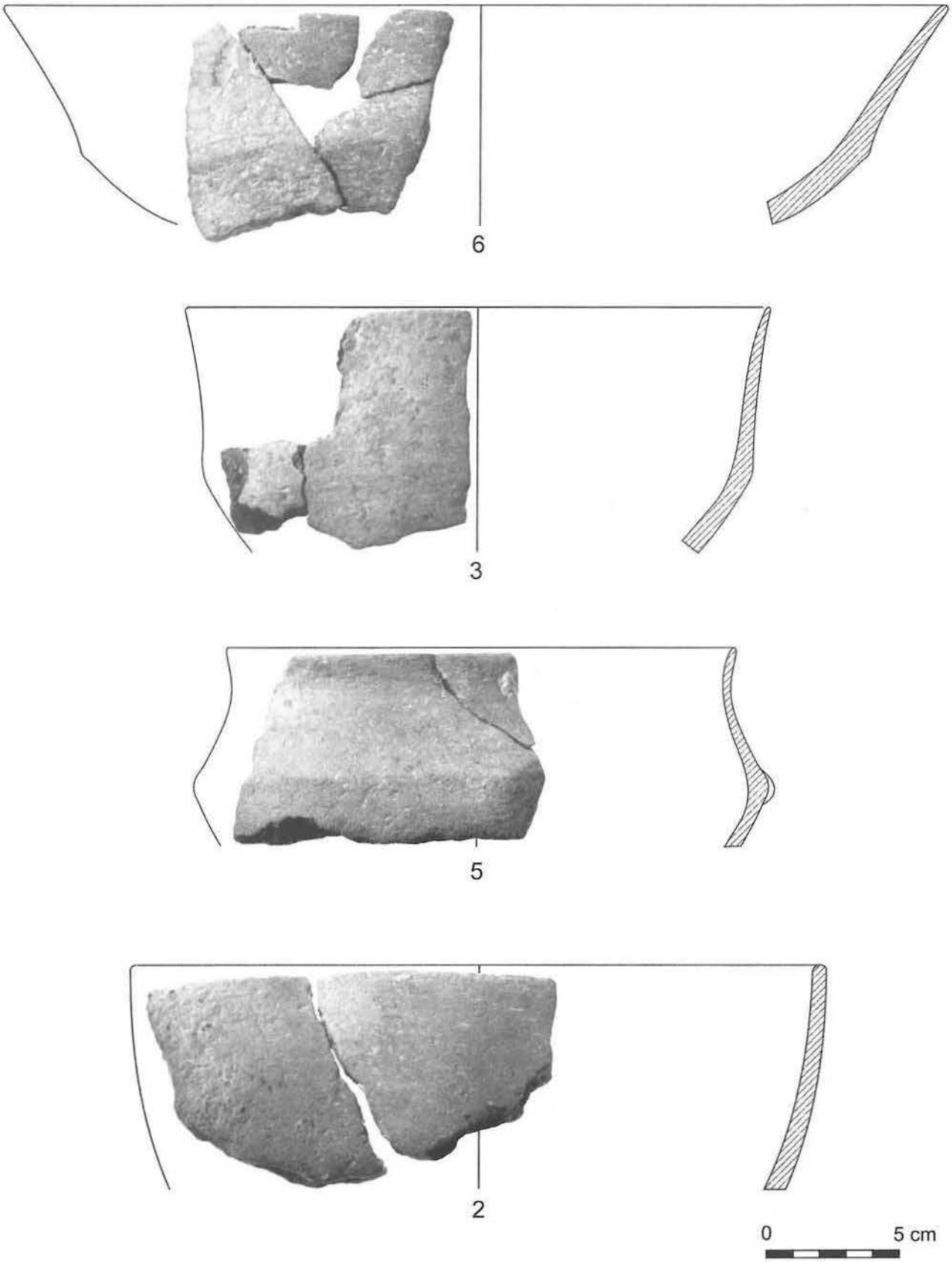


Fig. 29. Finds from Feature 9

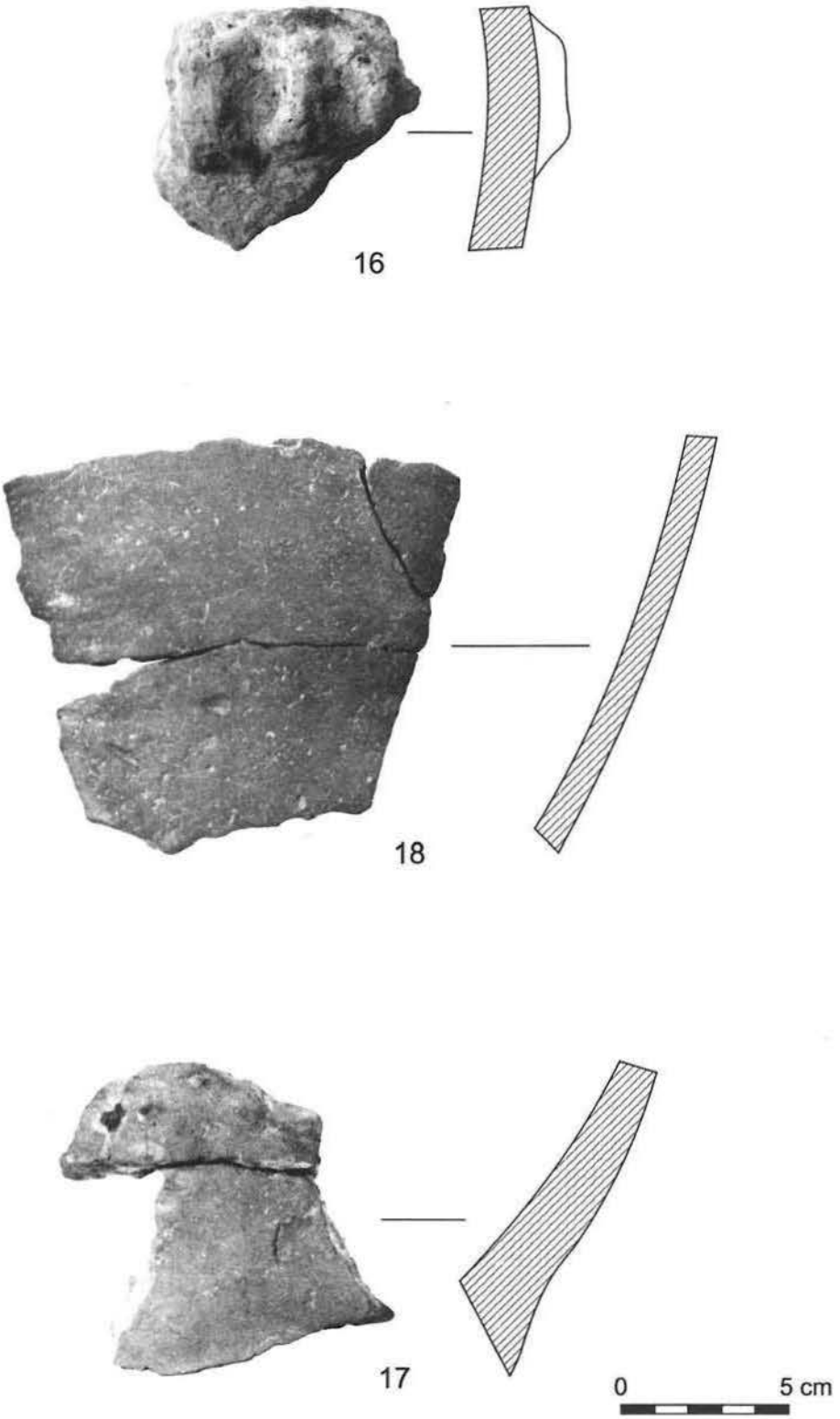


Fig. 30. Finds from Feature 9

Feature 10

A small cluster of sherds was noted in the northwestern corner of Feature 3 during its clearing. This was originally interpreted as a separate feature, but it later became clear that it was part of Feature 3.

Feature 11 *(Figs 31–33)*

A large oval pit oriented exactly to the north, its length slightly over 4 m. Its width was slightly greater in the southern part (160 cm) than in its northern part (118–127 cm). Larger burnt daub fragments, some bearing twig imprints, and vessel fragments lay on top of the burnt debris. The burnt daub fragments lay *in situ*, as they had fallen when the house was destroyed. In one case, it could also be observed how one of the burnt wall fragments crushed a larger vessel. A greyish, granular, mixed layer containing many finds was uncovered at an average depth of 45 cm under the burnt debris. In addition to various vessels that could be assembled from their fragments, we also found a large, burnt clay plaque that we interpreted as the base of a large storage bin and a body fragment that perhaps came from the same bin. Another thick clay plaque was not part of a vessel, but perhaps a baking platter. In addition to a number of chipped stone implements, one of the most important assemblages of the settlement came from this feature: at a depth of 50–55 cm we found a long river pebble in the burnt debris, its tip pointing to the north. The wear traces suggest that it had been used as a whetstone. Another flat, oval pebble lay beside it; this pebble also showed traces of wear. Beside the two pebbles stood an almost completely intact clay animal figurine whose head faced north. The assemblage appears to have been consciously arranged in this manner. Under this assemblage we found the remains of a roughly 5 cm thick organic substance, probably the remains of a wooden plank covered with resin,[11] that could be clearly distinguished from the greyish, granular, hard layer. Another interesting feature of the fill was that it contained finds almost down to the subsoil, meaning that this pit had not been immediately filled up by the occupants, but had remained open for some time after the house had been built.

Finds[12] *(Figs 34–45)*

A total of 890 pottery fragments, some chipped stone implements, 2 whetstones, 4 grinding stones and 43 burnt daub fragments (3.1 kg), some with twig imprints, as well as an animal figurine were recovered from this feature.

1. Body fragment. Tempered with chaff and sand, extremely porous, originally covered with a rather poor quality slip that has almost completely worn off, from the belly of a biconical vessel, originally decorated with a rounded knob on the carination that has broken off.
2. Rim fragment. Brownish-red, tempered with chaff and sand, from a storage jar with roughened surface and slightly outturned rim. Traces of smoothing with a piece of wood can be seen on the exterior. Rim diam.: 38–40 cm.
3. Body fragment. Tempered with chaff and sand, from a porous, poorly fired, thick-walled vessel, with traces of rough polishing on the interior side. The outer side of the core is black, the interior is red. A large round applied ornament broke off from the vessel surface. Wall th.: 2.1 cm, diam. of applied ornament: c. 8.5 cm.
4. Base fragment. Tempered with chaff and sand, "sandwich" core, from a porous, globular vessel.

[11] The samples were analyzed at the Hungarian State Geological Institute (MÁFI). I would here like to thank Károly Brezsnyánszky and Tibor Cserny for the determination of the sample.

[12] Inv. no. 93.112.1–100.

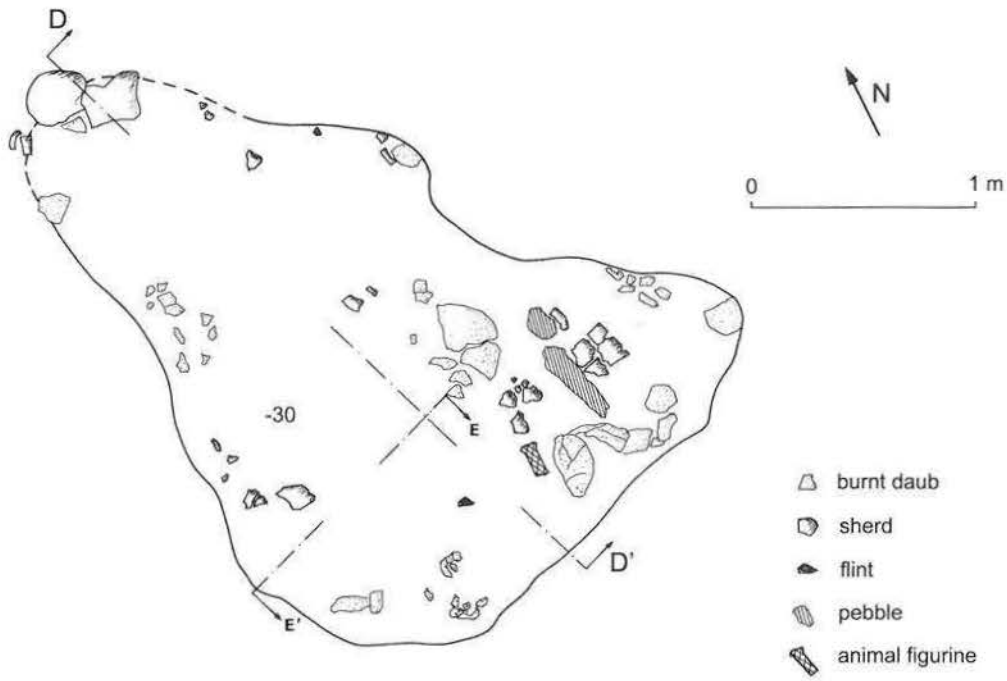


Fig. 31. Feature 11 (surface)

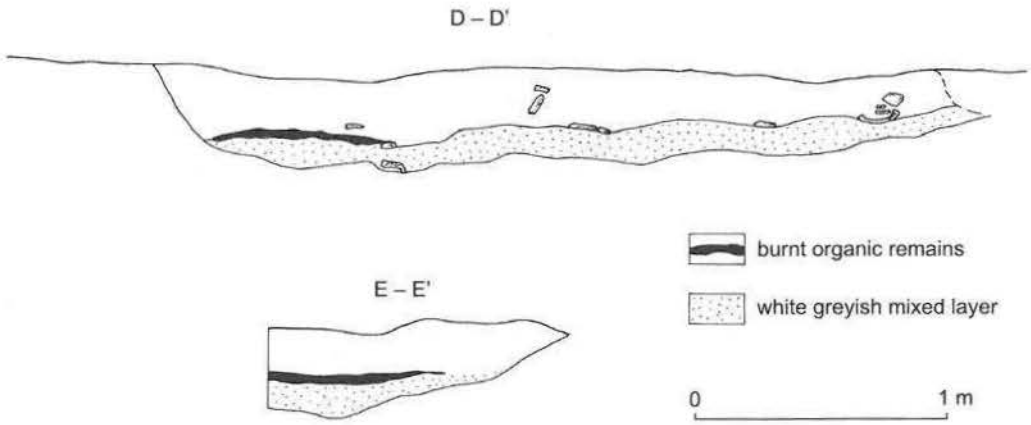


Fig. 32. Feature 11 (section)

5. Body fragment. Red, tempered with chaff and sand, from a large, thick-walled, biconical vessel, decorated with two deeply incised, horizontal lines and four oblique, pinched decorations on the belly.[13] Wall th.: 1.1 cm.
6. Lug handle. Red, tempered with chaff and sand, decorated with three finger impressions, from a larger vessel.
7. Body fragment. Red, tempered with chaff and sand, from a smaller vessel covered with a polished, dark red slip on the exterior. Wall th.: 0.9 cm.

[13] The nail imprints were examined by György Cseplák, who concluded that they reflected a small woman's hand or a child's hand. I would here like to thank him for his work.

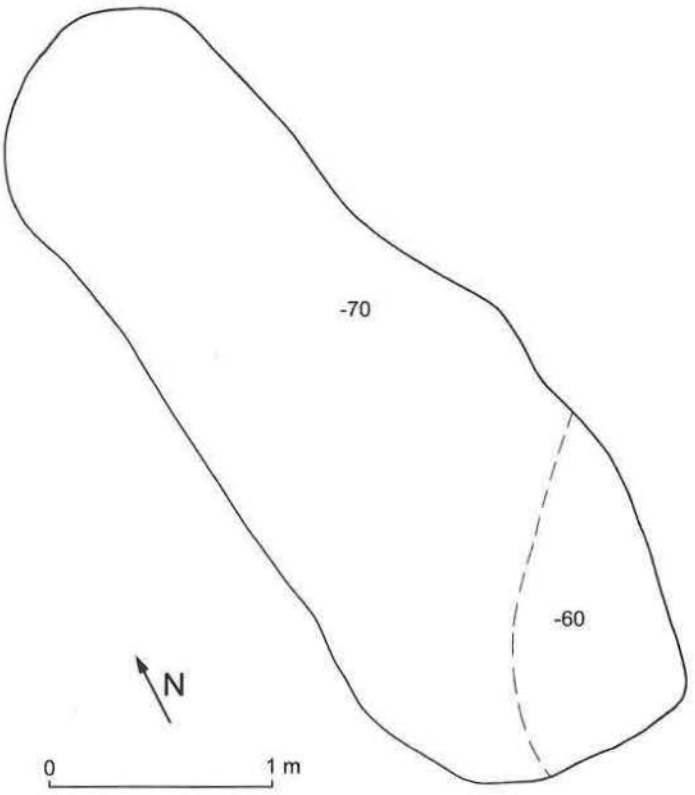


Fig. 33 Feature 11 (ground plan)

8. Body fragment. Red, tempered with chaff and sand, from a vessel covered with a polished, dark red slip on the exterior. Wall th.: 1.0 cm.
9. Body fragment. Red, tempered with chaff and sand, from a vessel with "sandwich" core. Wall th.: 1.5 cm.
10. Body fragment. Red, tempered with chaff and sand, "sandwich" core, from a biconical vessel with a slight carination, decorated with a horizontal, bipartite knob. Remains of a polished, dark red slip on the exterior. Wall th.: 1.2 cm.
11. Base fragment. Light red, tempered with chaff and sand, from a porous vessel. Base diam.: 13 cm.
12. Body fragment. Red, tempered with chaff and sand, "sandwich" core, from a large, porous storage jar, decorated with a bipartite lug handle on the belly. Average wall th.: 1.4–3.8 cm, belly diam.: c. 75–90 cm.
13. Base fragment. Greyish-black exterior, bright red interior, from a large storage jar. Average wall th.: 1.8–2.3 cm, base diam.: 19 cm.
14. Body fragment. Red, tempered with chaff, from a thick-walled, poorly fired storage jar. In view of its deformation it may have become secondarily burnt when a large daub fragment fell onto it. Wall th.: 2.1 cm.
15. Body fragment with handle, from a well-fired storage jar tempered with chaff and sand, "sandwich" core. The surface is covered with a dark red slip that has worn off on a part of the horizontally set handle. Wall th.: 1.4 cm, belly diam.: c. 35 cm.
16. Body fragment with handle, from a red, poorly fired storage jar, tempered with chaff, "sandwich" core. The handle was set vertically. Average wall th.: 1.5 cm.
17. Body fragment with handle. Red, tempered with chaff and sand, from a well-fired, globular storage jar with funnel mouth. The handle was set horizontally. Average wall th.: 0.9–1.2 cm, diam. of belly: c. 30 cm.

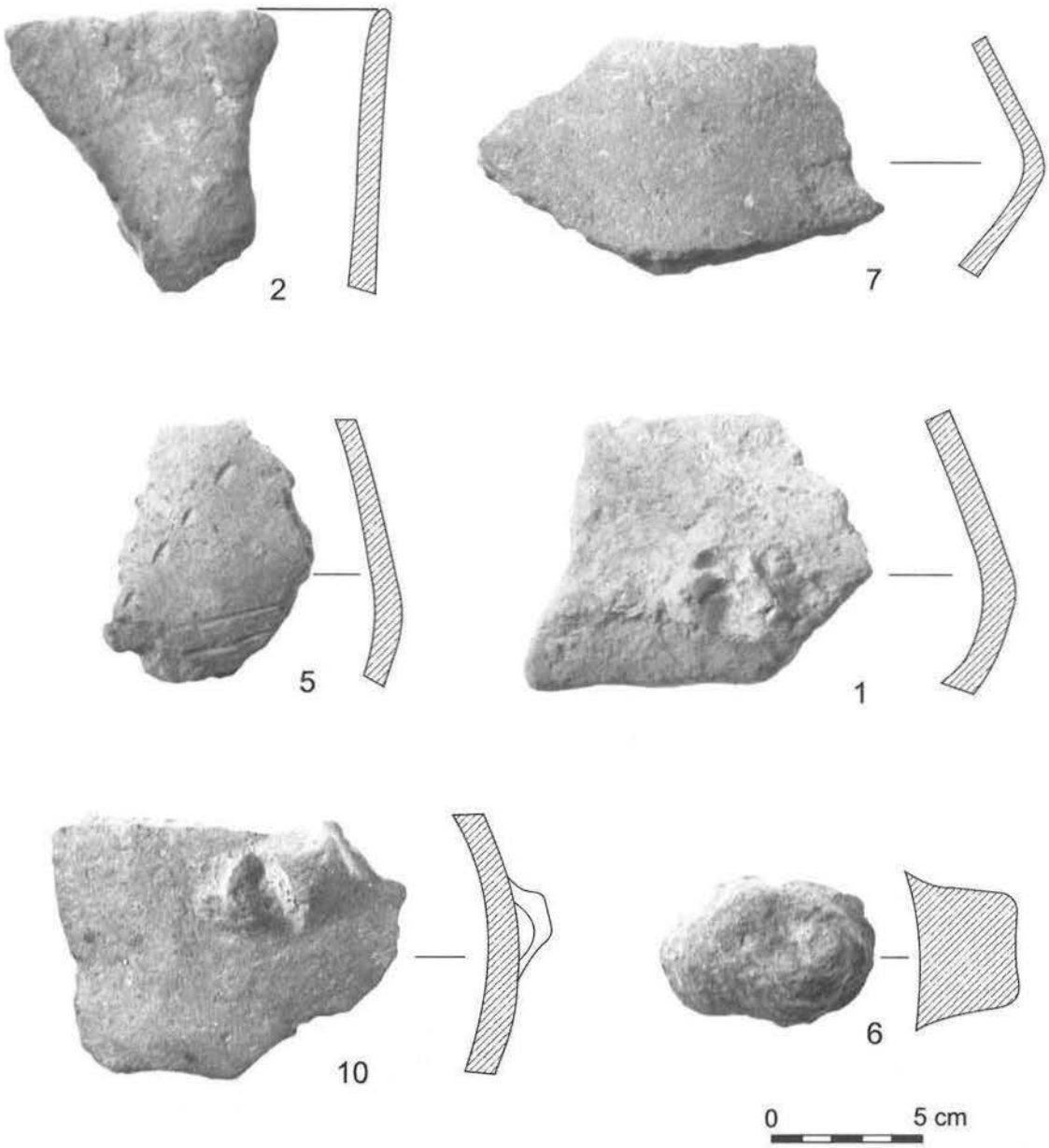


Fig. 34. Finds from Feature 11

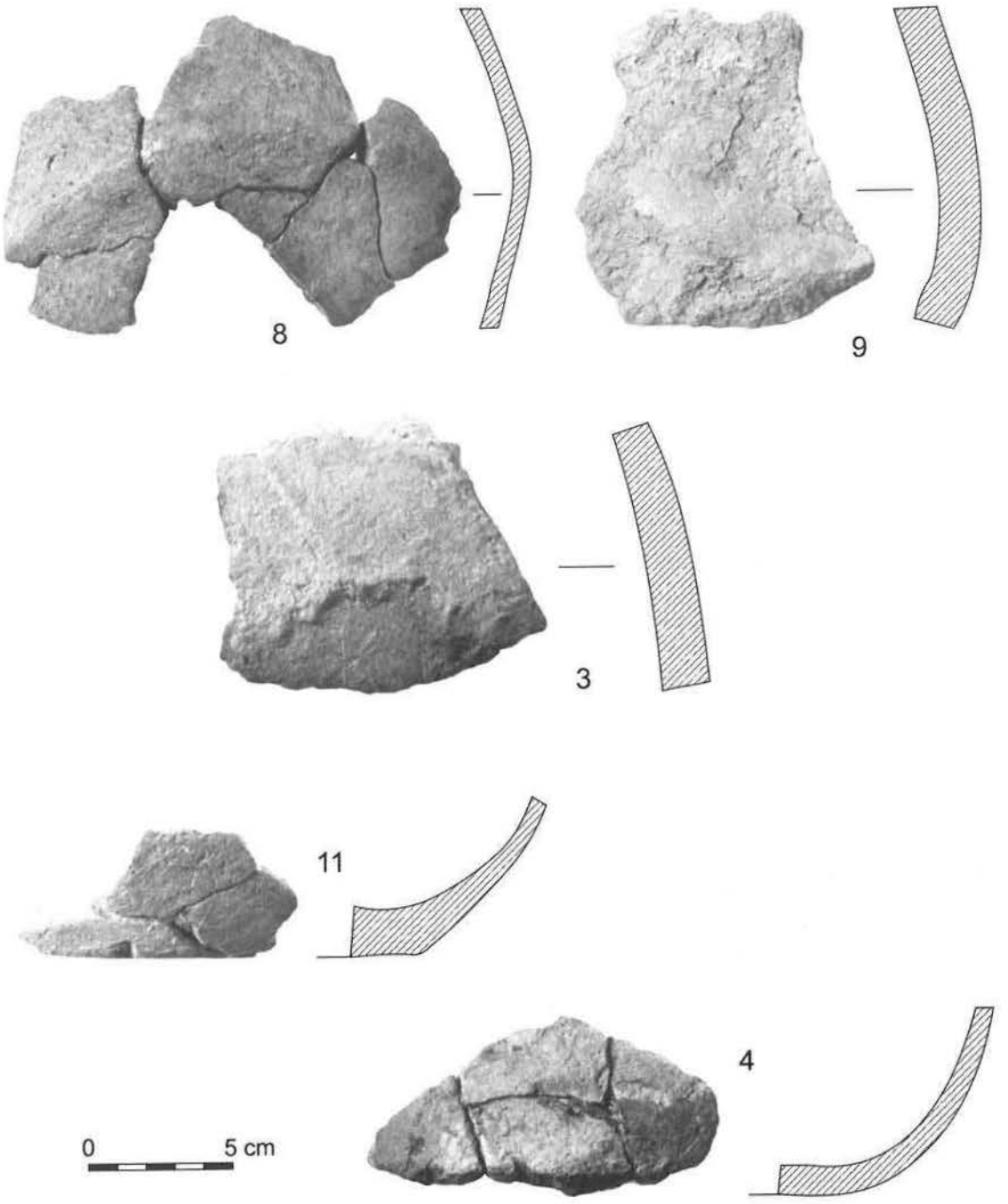


Fig. 35. Finds from Feature 11

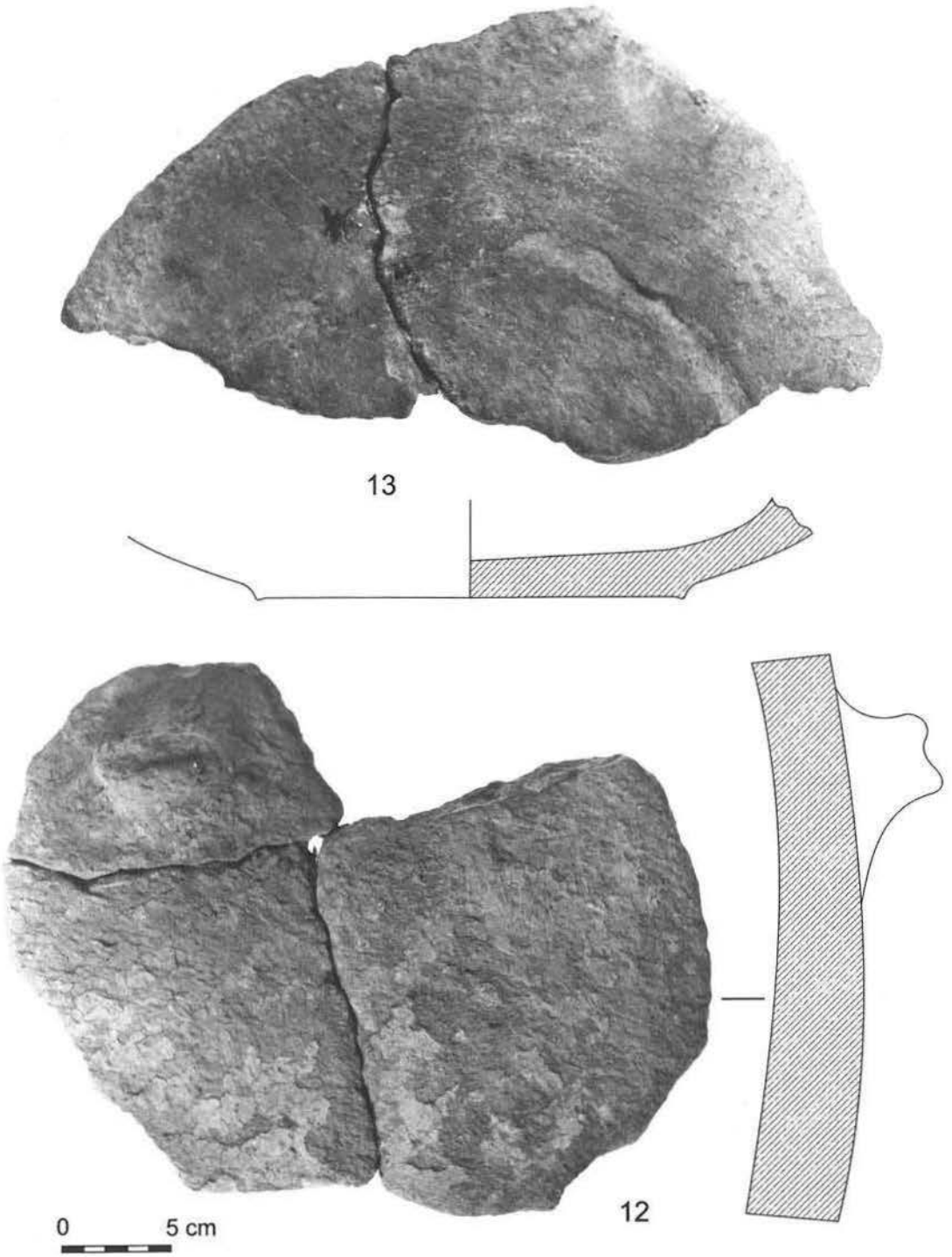


Fig. 36. Finds from Feature 11

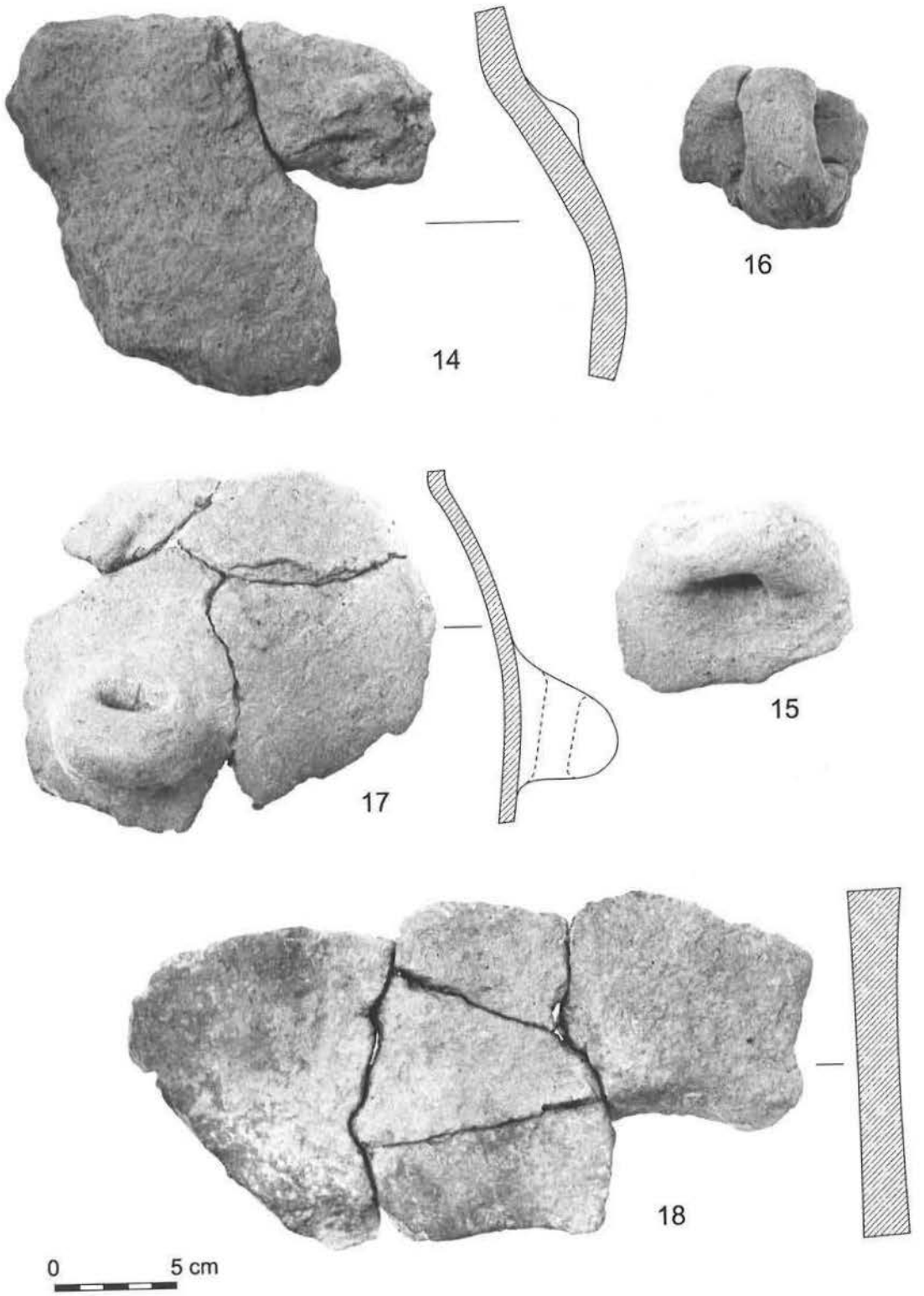


Fig. 37. Finds from Feature 11

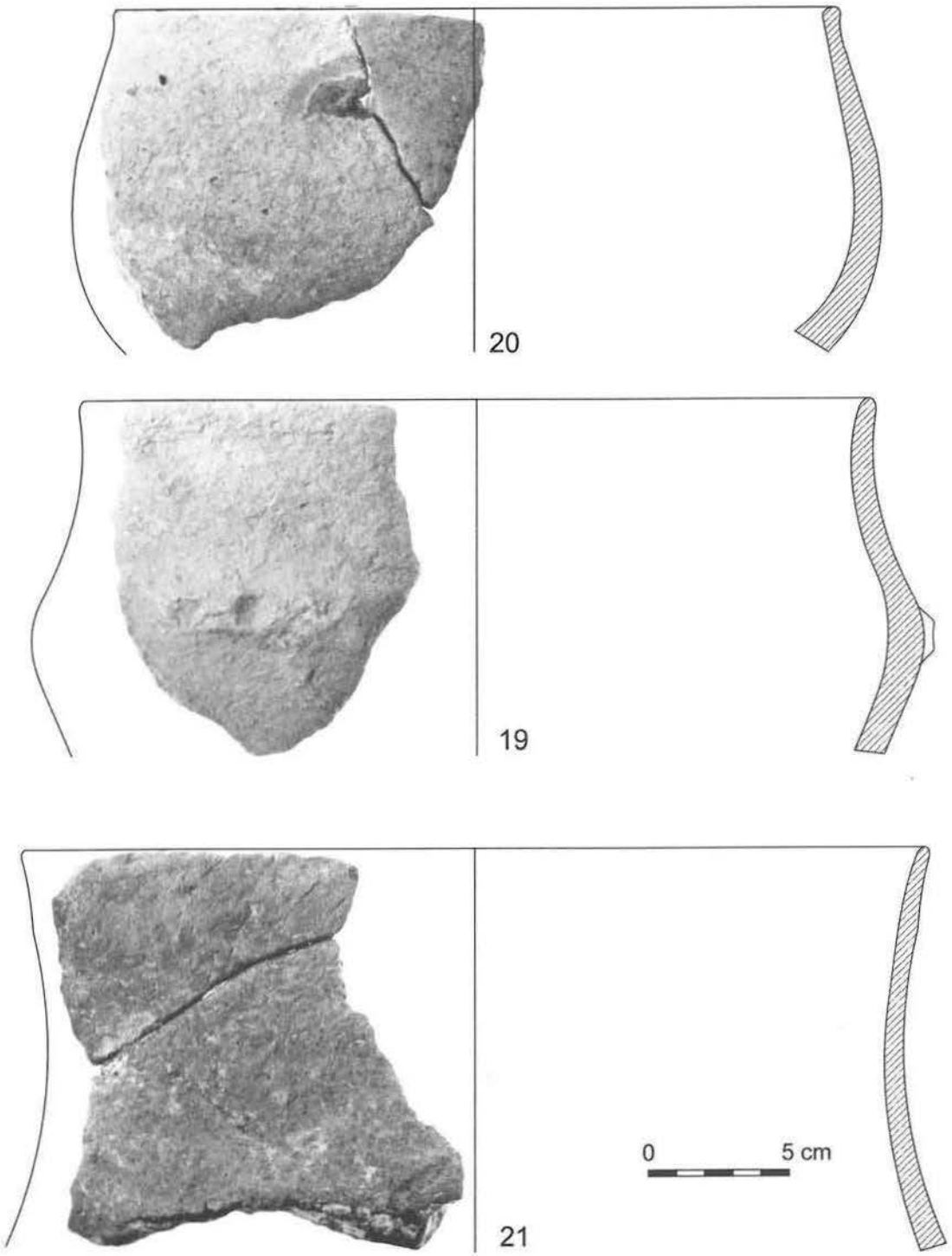


Fig. 38. Finds from Feature 11

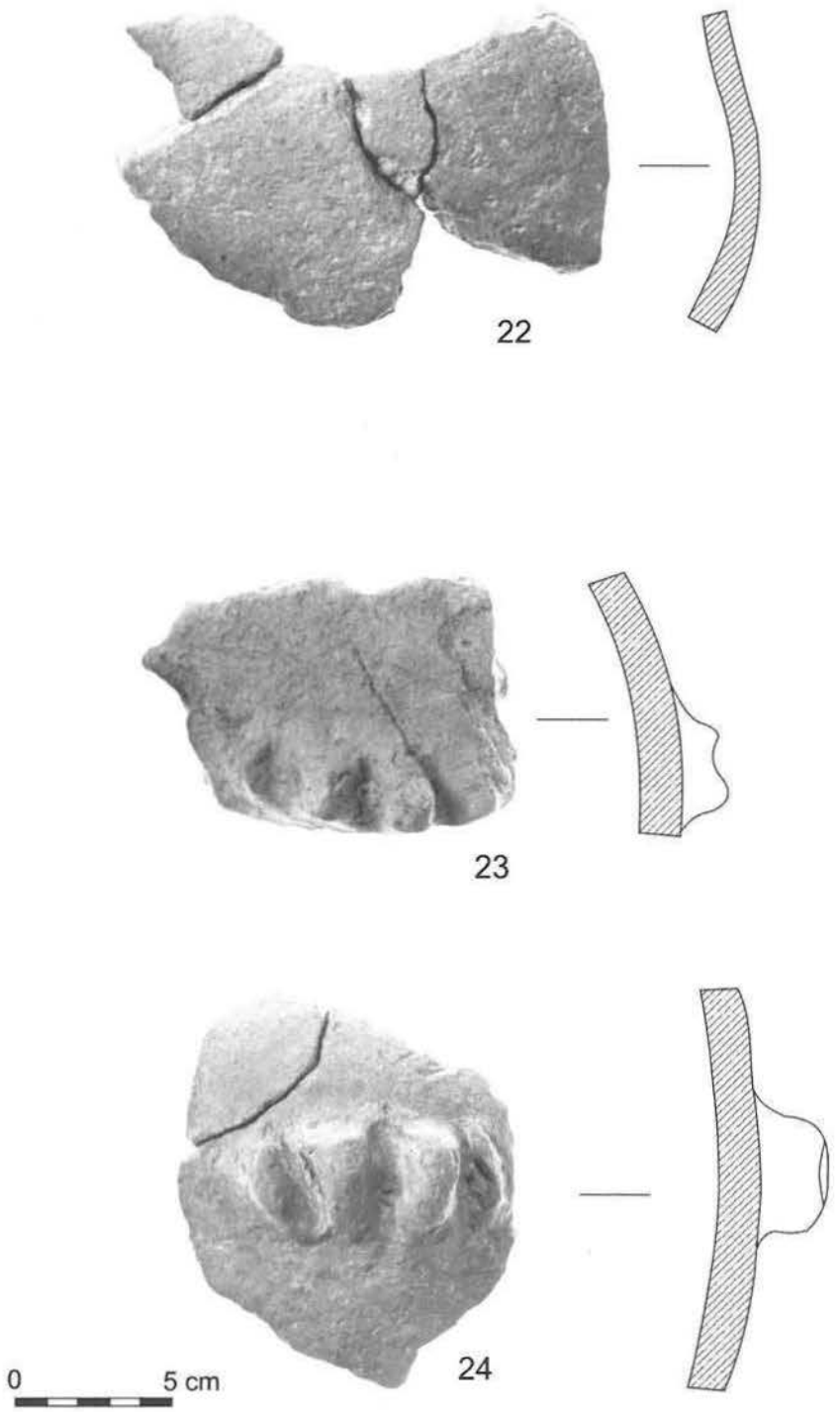


Fig. 39. Finds from Feature 11

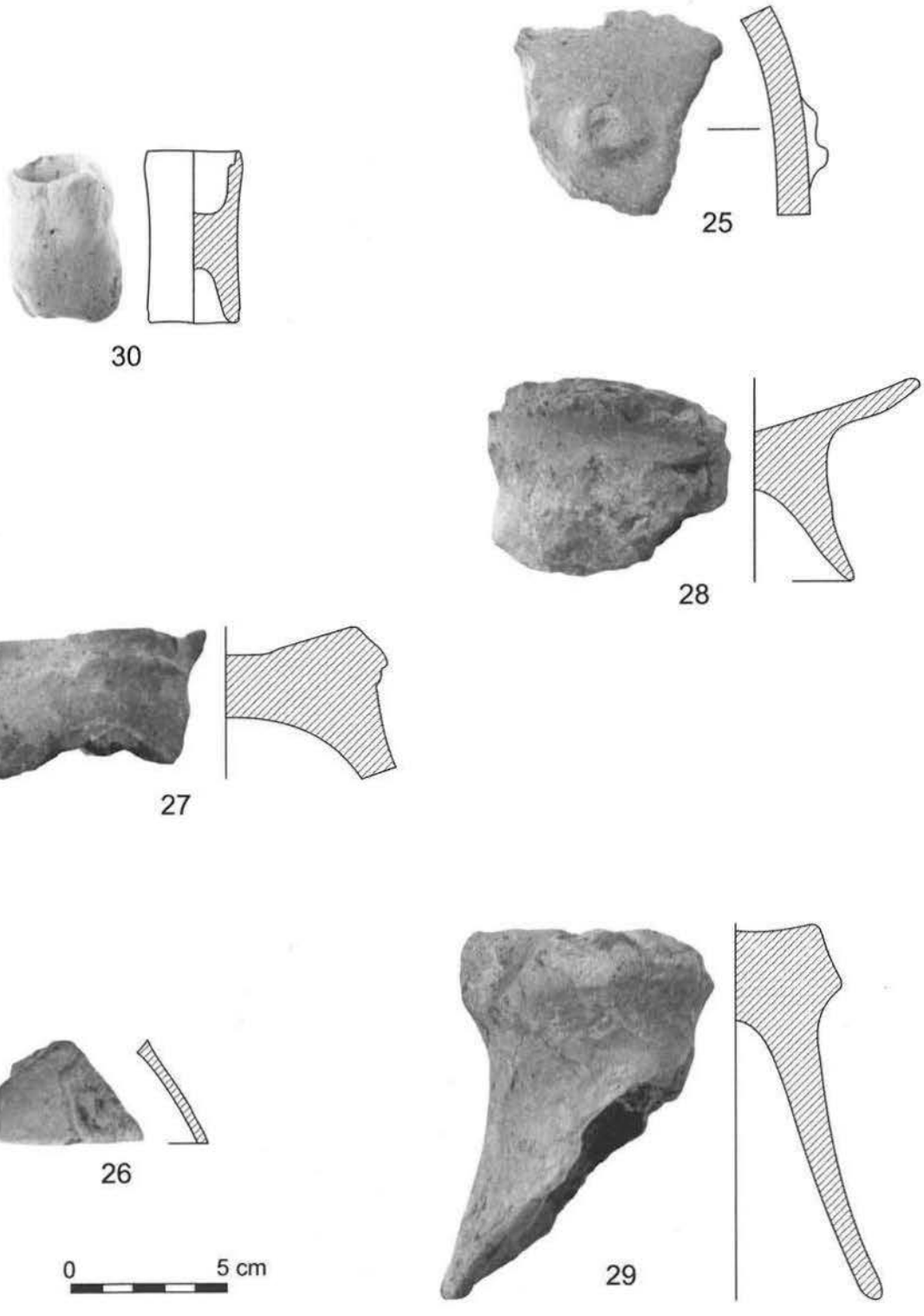


Fig. 40. Finds from Feature 11

18. Burnt clay plaque, perhaps a baking platter. Poorly fired, thick, black clay plaque with reddish patches, tempered with chaff. Wall th.: 2.2 cm.
19. Rim fragment. Bright red, tempered with chaff and sand, from a porous chalice shaped bowl with a strong carination. Worn surface, decorated with a finger impressed rib on the belly. Rim diam.: 29 cm, wall th.: 0.8–1.3 cm.
20. Rim fragment. Red, tempered with chaff and sand, "sandwich" core, from a porous, slightly globular, gourd shaped vessel with worn surface. Rim diam.: 26 cm, wall th.: 0.6–1.1 cm.
21. Rim fragment. Dark grey rim and shoulder fragment from a relatively thin-walled storage jar with outturned rim with a worn surface. Rim diam.: 32 cm, wall th.: 0.7–0.9 cm.
22. Body fragment. Bright red, tempered with chaff and sand, "sandwich" core, from the globular belly of a storage jar. Wall th.: 0.9–1.0 cm.
23. Body fragment. Red, tempered with chaff, sand and a few pebbles, "sandwich" core, from a large storage jar decorated with a large, finger impressed knob. Wall th.: 1.7 cm.
24. Body fragment. Red, "sandwich" core, tempered with chaff, sand and a few pebbles, from a large storage jar decorated with a large, grooved knob.
25. Body fragment. Red, tempered with chaff and sand, from the belly of a globular vessel, decorated with a finger impressed, large, round knob on the belly. Wall th.: 1.2 cm.
26. Fragment of a pedestalled vessel. Light red, tempered with sand, "sandwich" core, from a well-fired, conical pedestal made from finely levigated clay and polished on the exterior. Original height: ca. 5.5 cm. Wall th.: 0.6-1.0 cm. Base diam. of pedestal: 10 cm.
27. Fragment of a pedestalled vessel. Yellowish red and dark grey, tempered with chaff, from a porous vessel set on a high pedestal. The fragment comes from the juncture of the pedestal and the vessel. Diam. of juncture: 6.7 cm.
28. Fragment of a pedestalled vessel. Bright red, "sandwich" core, from a large, poorly fired pedestalled vessel. The pedestal is low, almost a ring base. H. of pedestal: 4.5 cm, diam. of base: 11 cm.
29. Fragment of a pedestalled vessel. Red and dark grey, tempered with chaff and sand, "sandwich" core, from a relatively high, flaring pedestal polished both on the exterior and on the interior. The base of the bowl is rather thick. Wall th.: 0.8 cm, wall thickness of the bowl base: 2.8 cm.
30. Loom weight. Light reddish-grey, more or less cylindrical clay loom weight tempered with sand. One end is rounded, the other is oval in section. The perforation did not extend along the entire length, it is unperforated in the middle. H. 4.9 cm, diam.: 3.8 cm.
31. Rim fragment. Reddish, tempered with chaff and sand, "sandwich" core, from a vessel with slightly curved shoulder, covered with a polished, dark red slip both on its exterior and interior and decorated with an obliquely set, downward pointing, triangle shaped applied ornament on the belly. Wall th.: 0.7–1.3 cm.
32. Rim fragment. Red, tempered with chaff and sand, "sandwich" core, from a well-fired, small vessel with straight walls covered with a polished, dark red slip both on its exterior and interior. Wall th.: 0.4–0.7 cm.
33. Rim fragment. Red, tempered with sand, from a well-fired, small vessel with inturned rim, covered with a polished, dark red slip both on its exterior and interior. Wall th.: 0.5 cm.
34. Rim fragment. Reddish, tempered with chaff and sand, "sandwich" core, from a straight-walled vessel, with traces of a dark red slip. Wall th.: 0.8–1.2 cm.
35. Fragment of a pedestalled vessel. Red, tempered with chaff and sand, from a slightly curved, low pedestal, covered with a dark red slip. Thickening on the pedestal base. Wall th.: 0.6 cm.
36. Body fragment. Light red exterior, black interior, from an extremely thin-walled, small vessel with uneven surface. Wall th.: 0.2 cm.
37. Body fragment. Dark red, tempered with chaff and sand, from the belly of a porous, biconical vessel with a marked carination, traces of a dark red slip. Wall th.: 1.2–1.4 cm.
38. Body fragment. Red and greyish-black patches, tempered with chaff and sand, "sandwich" core, from a biconical vessel with rounded carination, covered with a polished, dark red slip both on its exterior and interior. Wall th.: 1.1 cm.

39. Body fragment. Red, tempered with chaff and sand, from the belly of a well-fired, biconical vessel with concave upper part, covered with a polished, dark red slip. Wall th.: 0.7 cm.
40. Body fragment with a handle. Red, tempered with chaff, sand and pebbles, from a porous storage jar with a vertically set strap handle. Wall th.: 0.8–1.6 cm.
41. Body fragment. Bright red, tempered with chaff, "sandwich" core, from a porous vessel with worn surface. The exterior is decorated with three deep, parallelly incised, horizontal lines, the interior is covered with lightly incised, irregular lines, perhaps the traces of a polishing tool. Wall th.: 0.7 cm.
42. Body fragment with a handle. Greyish-brown exterior, red interior, tempered with chaff, from a small storage jar with a vertically set handle. Wall th.: 0.8 cm.
43. Handle fragment. Bright red, tempered with chaff and sand, black core, from a porous, vertically set, cylindrical handle with porous surface, decorated with four finger impressions.
44. Body fragment. Red, tempered with chaff and sand, from a biconical vessel with polished exterior, decorated with a finger impressed rib on the belly. Wall th.: 1.0 cm.
45. Body fragment. Bright red, tempered with chaff and sand, "sandwich" core, from a porous vessel, decorated with a small, pointed knob. Wall th.: 0.7–0.9 cm.
46. Body fragment. Red, tempered with chaff and sand, from the belly of a slightly biconical vessel, covered with a polished, dark red slip both on its exterior and interior. Wall th.: 0.6 cm.
47. Body fragment. Red, tempered with chaff and sand, from the shoulder of a smaller storage jar, covered with a polished, dark red slip both on its exterior and interior. Wall th.: 0.5 cm.
48. Body fragment. Red, tempered with chaff and sand, "sandwich" core, from a thick-walled vessel, covered with a polished, dark red slip both on its exterior and interior. Wall th.: 0.9–1.4 cm.
49. Body fragment. Reddish, tempered with chaff and sand, "sandwich" core, from the belly of a globular vessel (perhaps with a ring base), covered with a dark red, brownish and black slip polished to a fine lustre both on its exterior and interior. Wall th.: 0.5 cm.
50. Base fragment. Bright red, tempered with chaff and sand, from a porous storage jar. Base diam.: 14 cm, wall th.: 0.8–1.6 cm.
51. Body fragment. Red, tempered with chaff and sand, from the belly of a large, biconical vessel, polished both on its exterior and interior. Wall th.: 0.8–1.4 cm.
52. Base fragment. Light yellowish-red, tempered with chaff and sand, probably from a biconical vessel. Base diam.: 10 cm, wall th.: 1.1 cm.
53. Body fragment (four non-joinable sherds). Bright red exterior, dark grey interior, tempered with chaff and sand, from a globular vessel with porous surface, decorated with two deeply incised, spiral meander patterns. The vessel had originally contained some kind of black organic substance or paint, remains of which were smeared over the exterior near the rim. Average wall th.: 1.1 cm.
54. Body fragment. Red, tempered with chaff and sand, from the belly of a biconical vessel, covered with a polished, dark red slip on its exterior. The belly is decorated with a finger impressed rib combined with a hand shaped lug and a deeply incised, spiral meander pattern above the hand. Wall th.: 0.7–1.3 cm.
55. Miniature vessel (assembled from its fragments). Bright red, biconical, thick-walled vessel with a porous surface, tempered with chaff and sand. Its upper part is convex. The carination line is very emphatic and has vertical perforations (on the basis of similar vessels we may reconstruct a total of three small, perforated knobs). Rim diam.: 6.5 cm (?).
56. Animal figurine. Bright red, tempered with chaff and sand, originally covered with a polished, dark red slip that has mostly worn off. Only the tips of the horns and the base of the feet are missing. The breakage shows black stripes, indicating that the figurine was poorly fired. The eyes are indicated with small impressions and lines, the body of the figurine is covered with a lightly incised pattern, differing on both sides of the back. The nose is perforated. L.: 12.2 cm, W. of back: 4.45 cm.

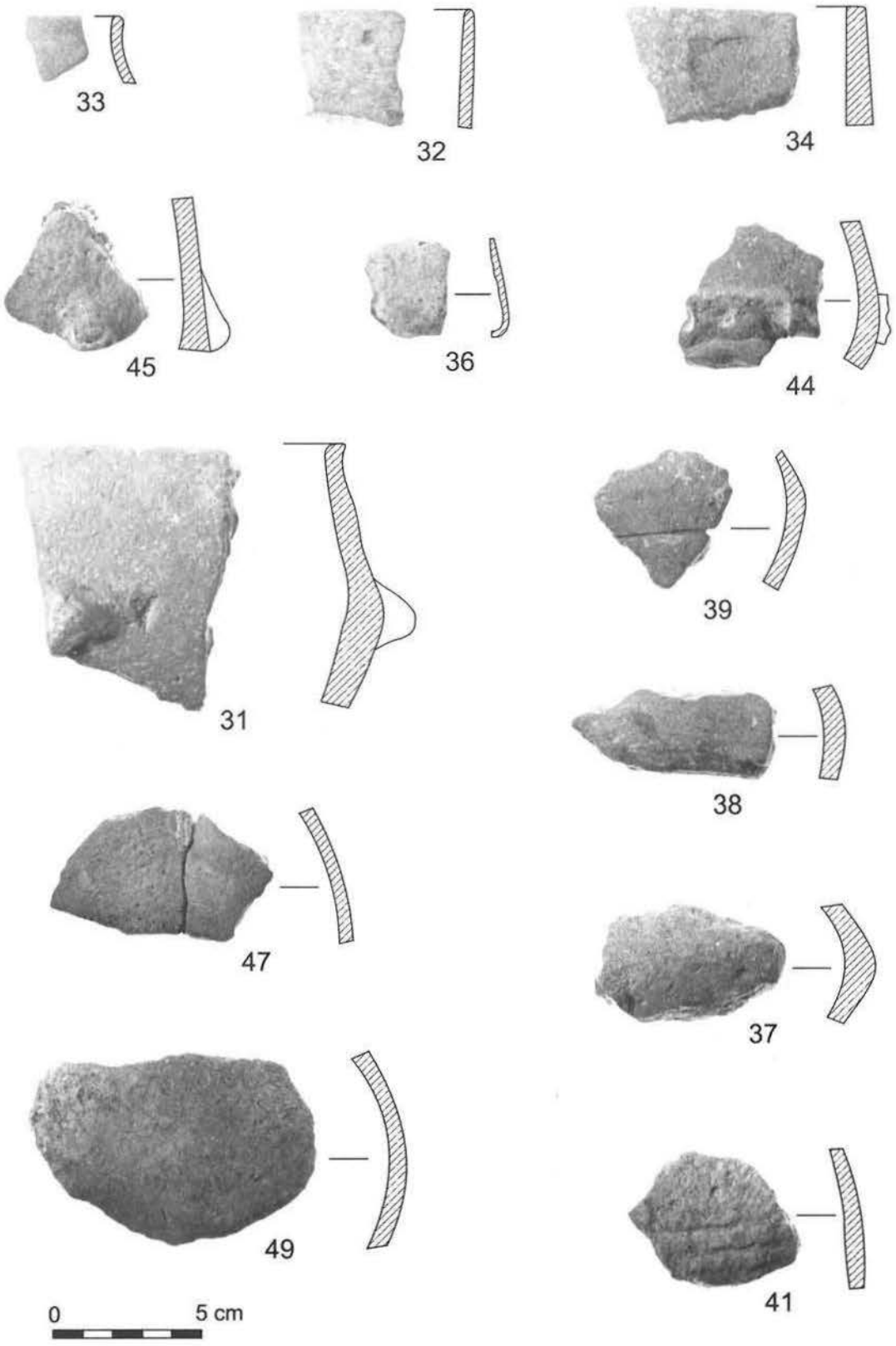


Fig. 41. Finds from Feature 11

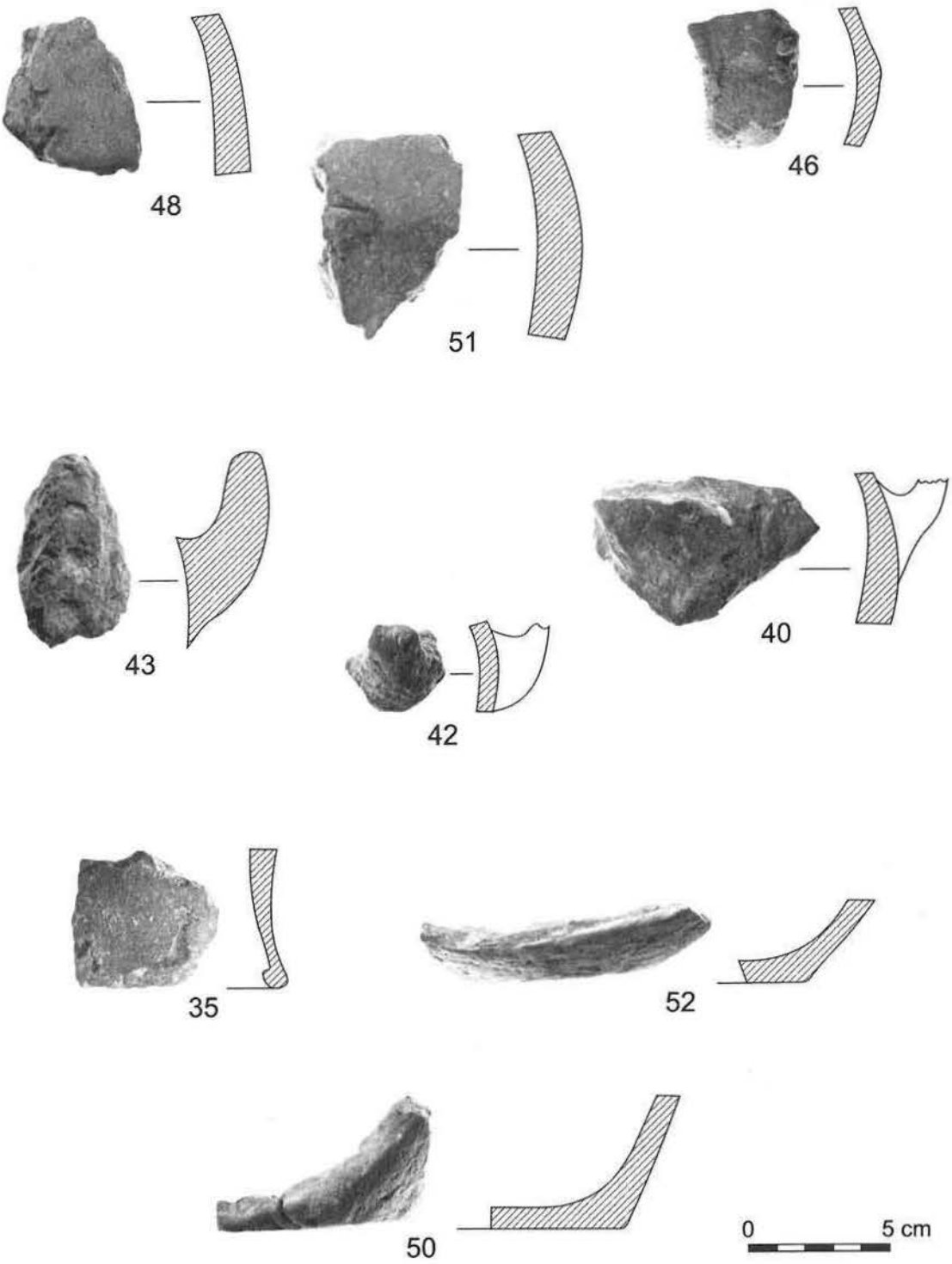


Fig. 42. Finds from Feature 11

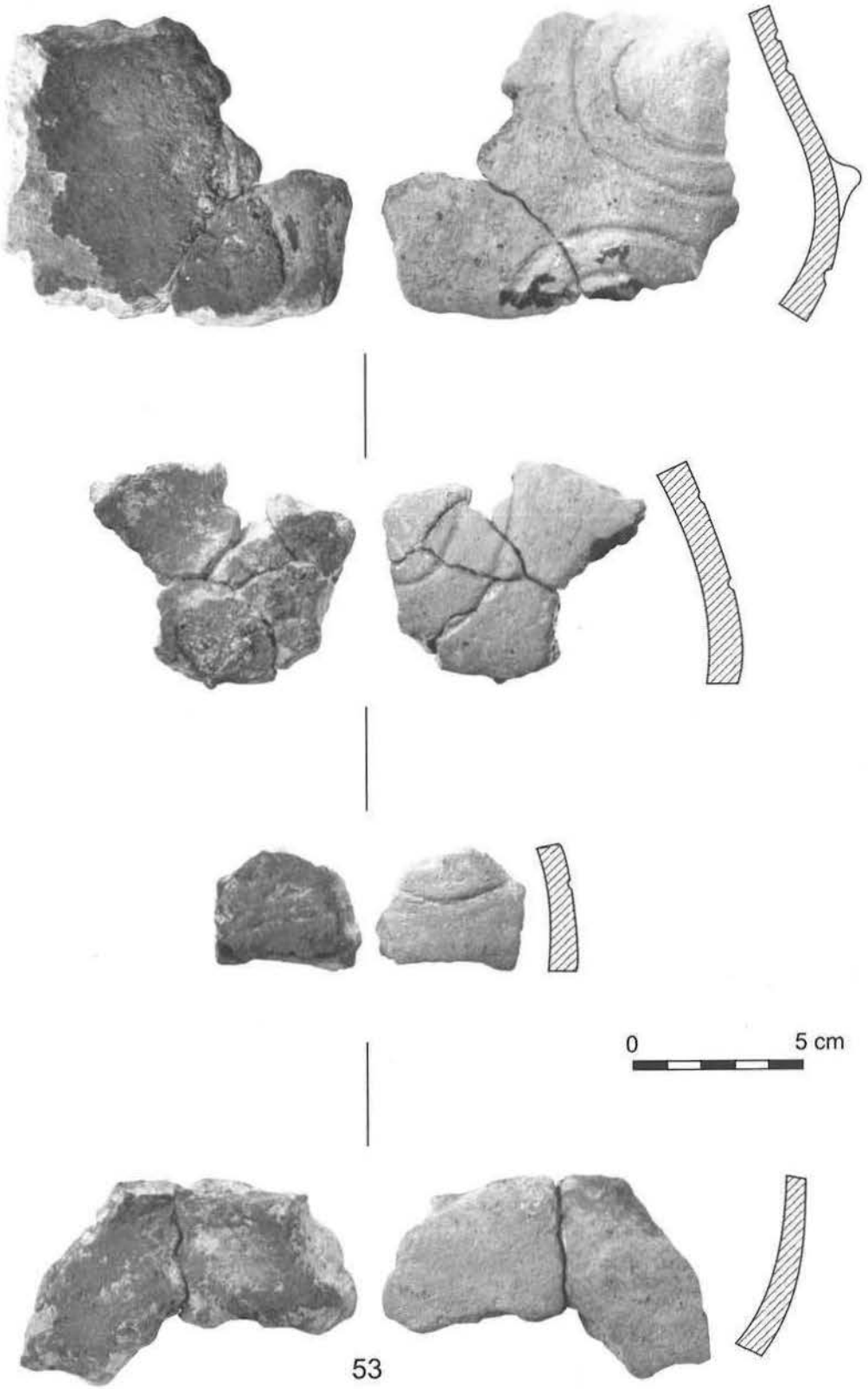


Fig. 43. Finds from Feature 11

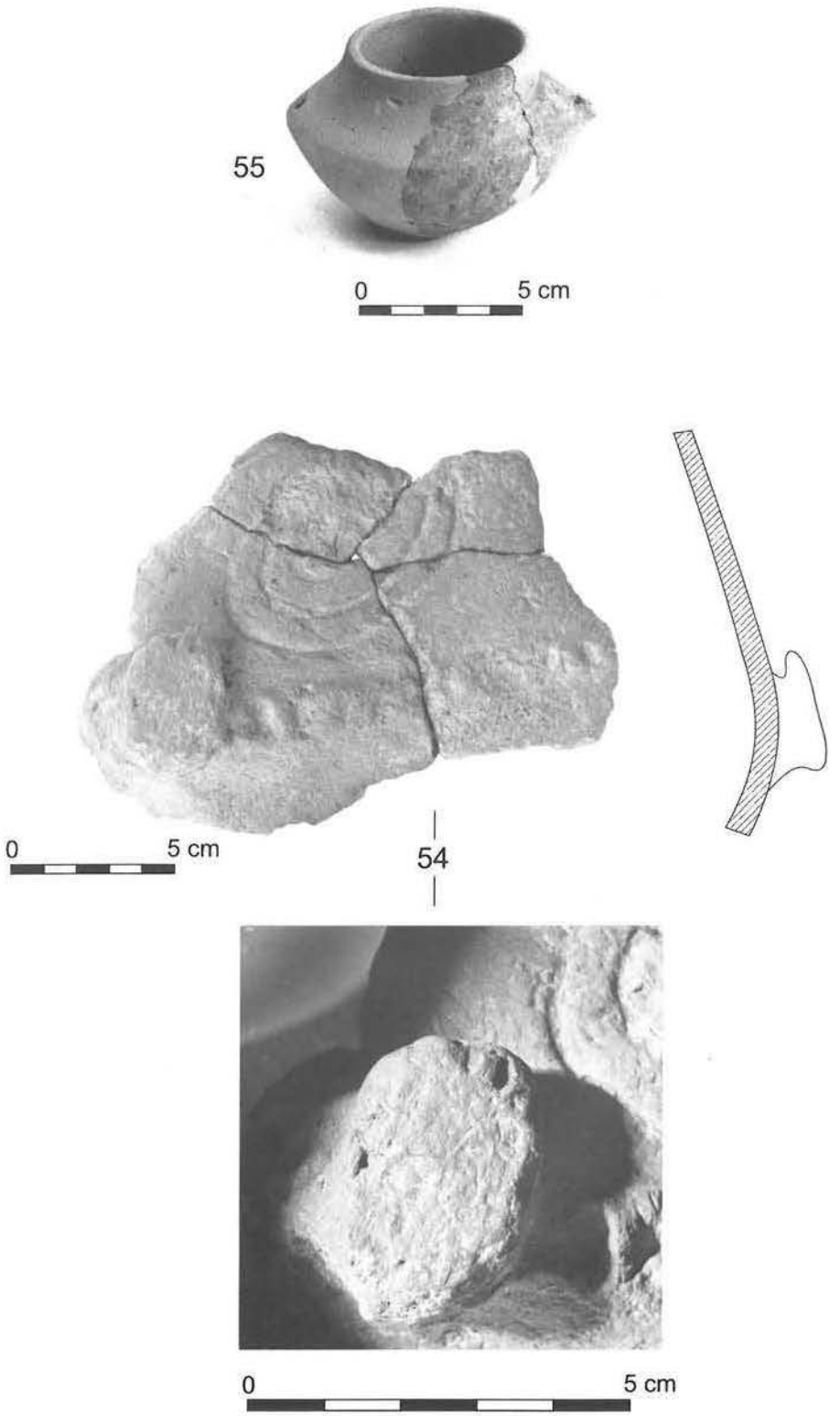


Fig. 44. Finds from Feature 11

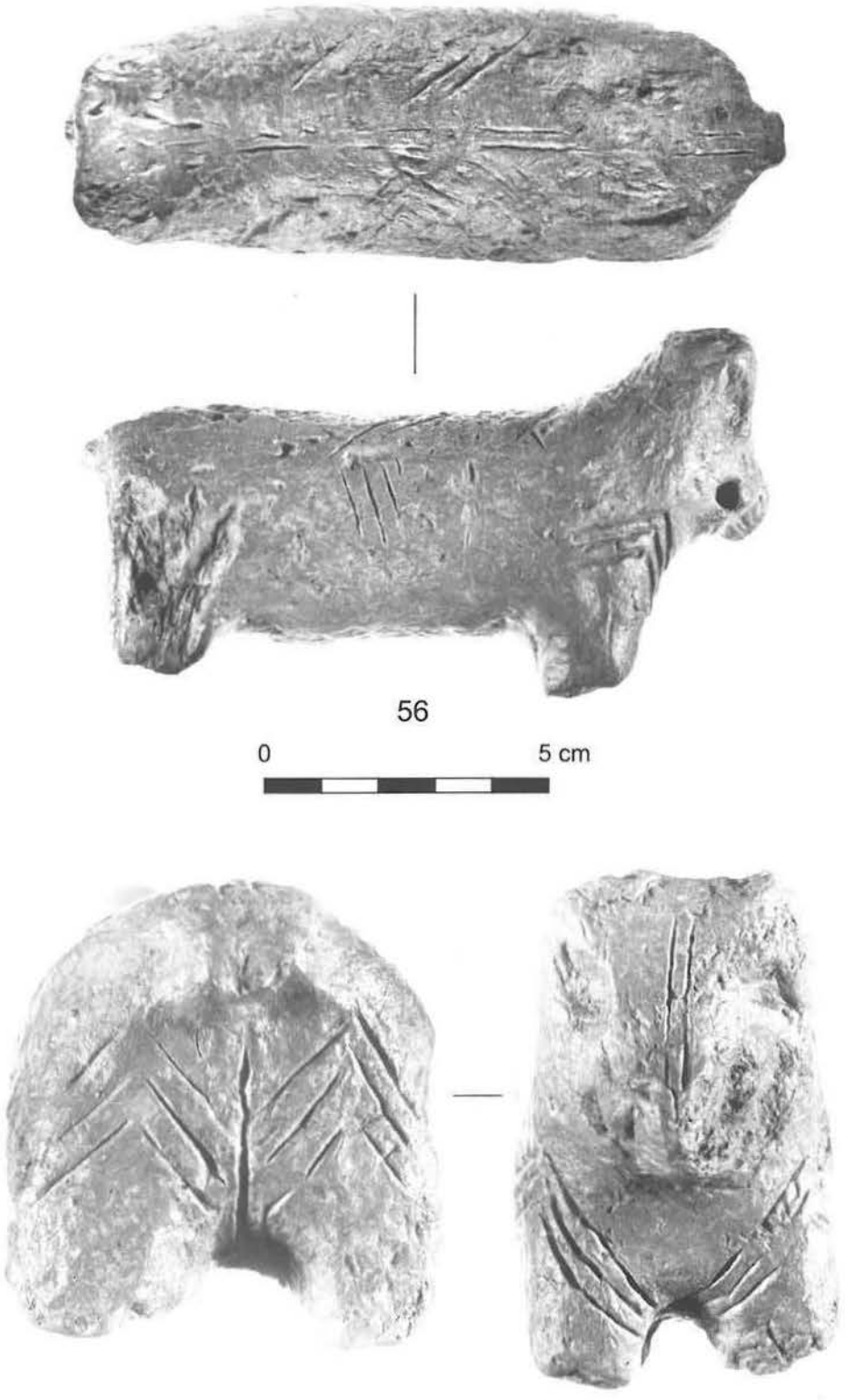


Fig. 45. Animal figurine from Feature 11

Feature 12 *(Figs 46–48)*

The continuation of Features 8 and 9: a narrow, north oriented, deep pit. A thick layer of strongly burnt debris and burnt daub lay at a depth of 45 cm. The often 18–20 cm thick burnt daub lumps formed a horizontal layer in the debris. The longitudinal axis of the fallen daub fragments corresponded to the orientation of the pit, suggesting that the burnt debris lay *in situ*, similarly to the layer below it. One side of the larger daub fragments was smooth, while the other side bore the imprint of twigs and wattling. The area that was less covered with daub fragments was also strongly burnt. The greyish, granular fill under the burnt debris layer contained countless finds. Most of these lay directly underneath the burnt daub fragments, although a few vessel fragments were also found on the floor of the pit, suggesting that this pit had not been filled in immediately. At a depth of 80 cm we found a small, narrow trench that widened in some spots, where its depth was 118 cm. The slightly oblique direction of these wide, rounded sections suggest that these had been postholes for posts that buttressed the house or its foundation from the outside.

The burnt debris and daub layer first appeared at higher points towards the north, lying no deeper than 3–5 cm or even less under the present surface at the edge of the trench. Since we could not explore the area north of the trench, we could only reconstruct the end of Feature 12 from the intensive daub fragments and other finds lying on the surface – these outlined its form more or less accurately. The burnt daub fragments, pottery finds and stone implements collected from this area were assigned to the finds from feature 12 and not to the finds collected during the field survey.

Finds[14] *(Figs 49–54)*

A total of 883 pottery fragments, some chipped stone implements, 1 grinding stone and 59 burnt daub fragments (6.7 kg), some with twig imprints, were recovered from this feature. The pottery finds included sherds on whose inner sides we found burnt food remains. However, these remains were so minimal that their microscopic and chemical analyses did not yield any results.

1. Rim fragment. Reddish-brown, tempered with chaff and sand, from a small pot with cylindrical neck with a worn surface. Wall th.: 0.4 cm.
2. Rim fragment. Light brown, tempered with chaff, sand and pebbles, from a thick-walled vessel with funnel shaped neck. Wall th.: 1.1–1.3 cm.
3. Rim fragment. Dark red, tempered with chaff and sand, from a smaller pot with worn surface and covered with a dark red slip on the interior. Traces of smoothing can be noted on the interior; it seems probable that the exterior was also smoothed. Rim diam.: 16 cm.
4. Body fragment. Dark red, tempered with chaff and sand, "sandwich" core, from a vessel covered with a polished, dark red slip both on its exterior and interior, decorated with a horizontally incised deep line. Wall th.: 0.7 cm.
5. Body fragment. Light red, tempered with chaff and sand, from the upper part of a globular vessel, decorated with a cylindrical, finger impressed knob. Wall th.: 0.6–0.7 cm.
6. Body fragment. Red, tempered with chaff and sand, from a smaller vessel with worn surface and the stump of a small, vertically set strap handle. Wall th.: 0.4–0.6 cm.
7. Base fragment. Light yellow, tempered with chaff, from the base of a globular storage jar with extremely worn surface. Wall th.: 0.7–1.3 cm.
8. Fragment of a pedestalled vessel. Reddish-brown, tempered with chaff and sand, from a slightly flaring pedestal. Wall th.: 0.3–0.9 cm, base diam.: 9 cm.
9. Fragment of a pedestalled vessel. Reddish-brown, tempered with chaff and sand, from a curved pedestal with upward thickening wall. Wall th.: 0.3–0.9 cm, base diam.: 9 cm.

[14] Inv. no. 93.113.1–99.

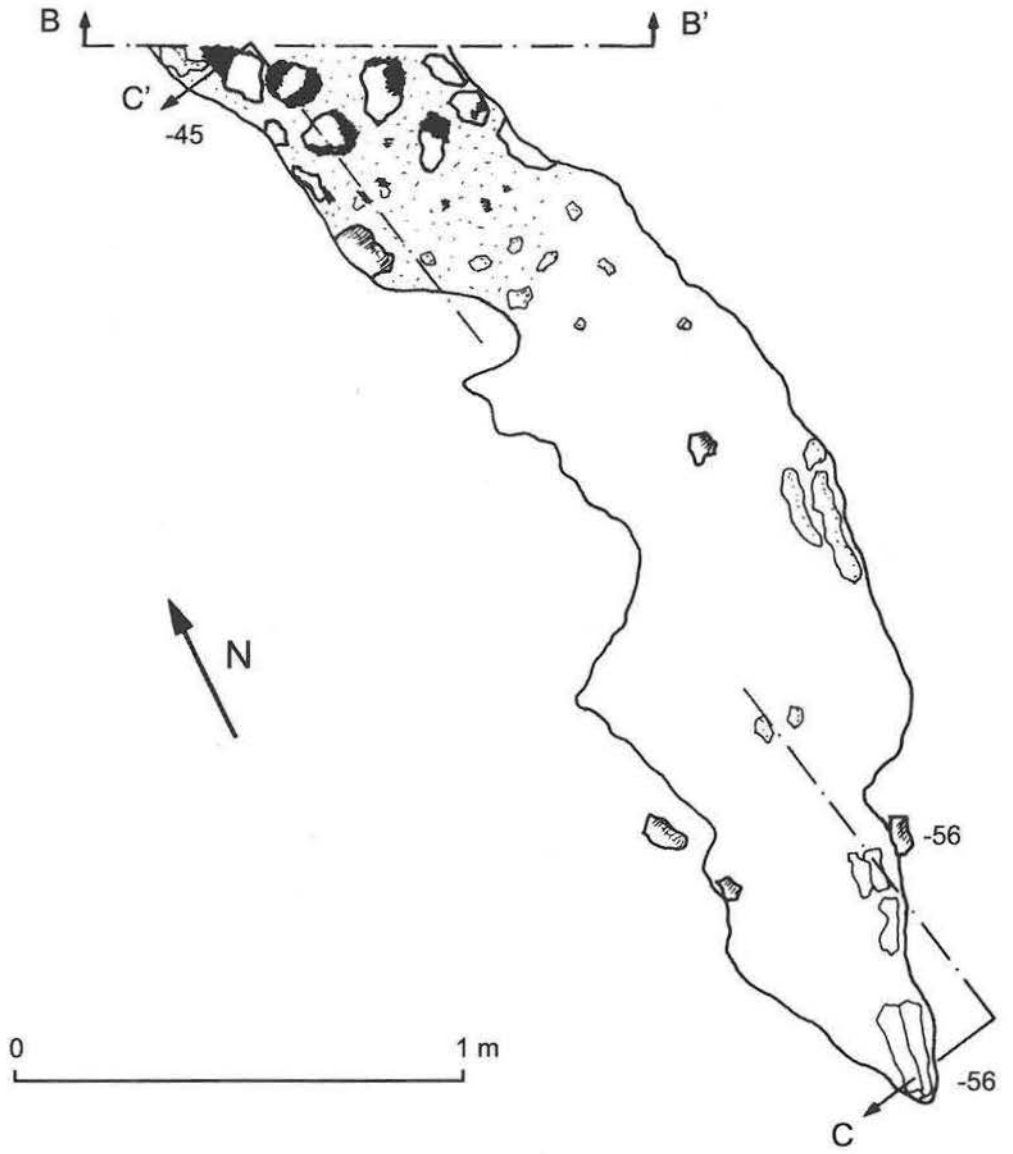


Fig. 46. Feature 12

10. Base fragment. Red, tempered with chaff and sand, "sandwich" core, from a porous vessel with globular body smoothed on its interior. Wall th.: 0.7–1.2 cm.
11. Base fragment. Reddish, tempered with chaff and sand, "sandwich" core, from a larger vessel. Wall th.: 1.4–1.5 cm.
12. Body fragment. Bright red, tempered with chaff and sand, from the neck and shoulder of a secondarily burnt and deformed large storage jar with smoothed surface. Wall th.: 1.3 cm.
13. Rim fragment. Bright red with grey patches, tempered with chaff and sand, from a large storage jar with porous and worn surface. Rim diam.: c. 50–52 cm, average wall th.: 1.2 cm.
14. Rim and body fragment. Red, tempered with chaff and sand, from a polished, thick-walled, globular bowl with inturned rim. Rim diam.: 39 cm, average wall th.: 1.6 cm.
15. Rim and body fragment. Red, tempered with chaff and sand, "sandwich" core, from a secondarily burnt biconical bowl, originally covered with a polished, dark red slip both on its exterior and interior. The slip has mostly worn off. Rim diam.: 46 cm, wall th.: 0.8–1.7 cm.
16. Base fragment. Bright red, tempered with chaff and sand, from a secondarily burnt and deformed vessel with worn and porous surface. Base diam.: c. 16 cm, average wall th.: 0.7 cm.

17. Rim fragment. Dark red, tempered with chaff and sand, from a large, slightly funnel mouthed vessel covered with a polished, dark red slip both on its exterior and interior. Rim diam.: c. 38 cm, average wall th.: 0.8 cm.
18. Rim and body fragment. Bright red, tempered with chaff and sand, from a large biconical bowl covered with a polished, dark red slip both on its exterior and interior. The upper part is incurving; its surface is worn in some spots. Rim diam.: 35 cm, wall th.: 0.5–1.2 cm.
19. Rim and body fragment. Bright red, tempered with chaff and sand, from a biconical bowl covered with a polished, dark red slip both on its exterior and interior. The upper part is incurving. Rim diam.: 23 cm, wall thickness: 0.5–1.2 cm.
20. Body fragment. Bright red with dark grey patches, tempered with chaff and sand, "sandwich" core, from a biconical mug with porous and worn surface, decorated with three pointed knobs and a finger impressed horizontal lug on the carination. Rim diam.: c. 14 cm, wall thickness: 1.1–1.2 cm.
21. Body fragment. Red, tempered with chaff and sand, from a large, worn vessel decorated with a finger impressed ridge. Wall th.: 1.7 cm.
22. Body fragment. Red, tempered with chaff, "sandwich" core, from a worn, poorly fired storage jar with the remains of a horizontally set handle. Average wall th.: 1.1 cm.
23. Handle. Reddish-brown, tempered with chaff and sand, from a worn, porous storage jar.
24. Body fragment. Reddish and greyish patches, from a small, deep bowl decorated with a tongue shaped lug handle on the carination.
25. Handle. Bright red, porous, poorly fired, vertically set handle tempered with chaff and sand, with remains of vertical ribs.

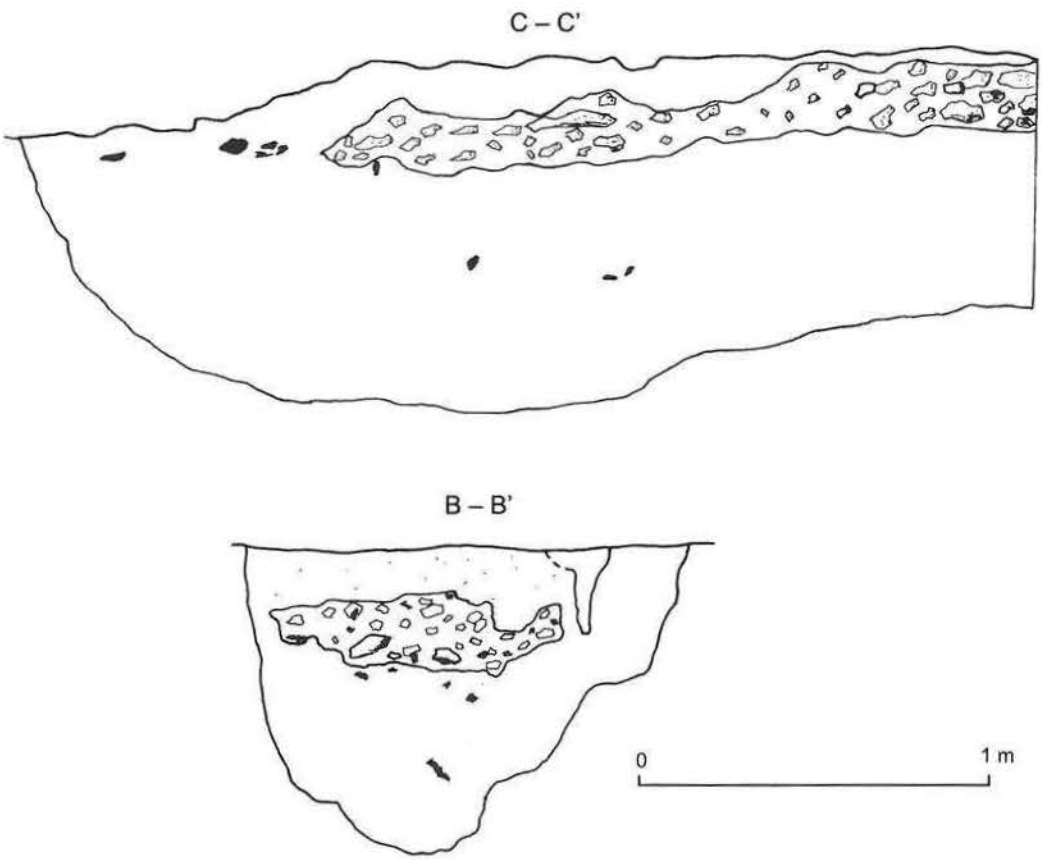


Fig. 47. Feature 12 (sections)

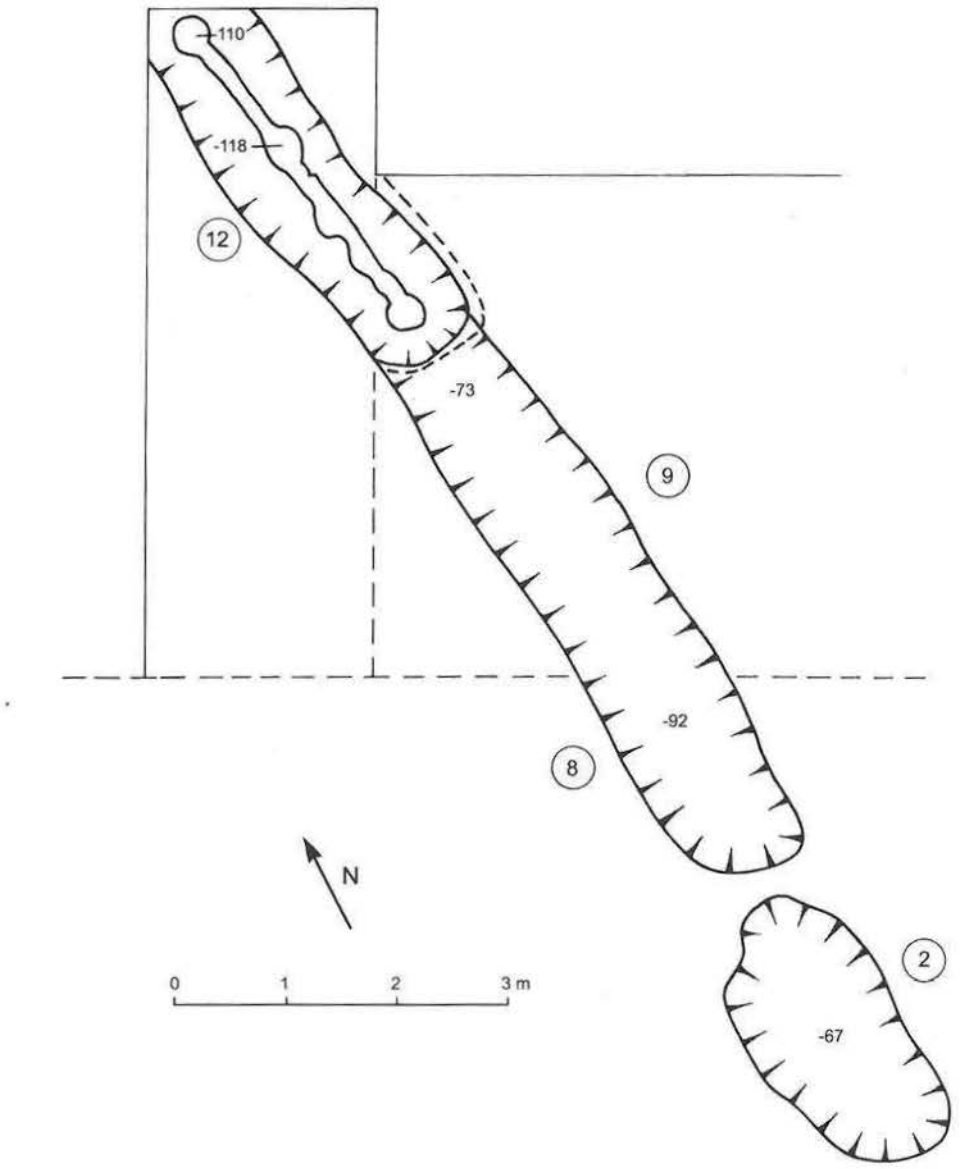


Fig. 48. Features 2, 8–9 and 12

26. Lug fragment. Red, tempered with chaff and sand, "sandwich" core, from a horizontally set a bipartite lug handle.
27. Body fragment. Bright red, tempered with chaff and sand, "sandwich" core, from a larger, porous vessel decorated with a round knob. Wall th.: 1.3 cm.
28. Body fragment. Reddish-grey, tempered with chaff and sand, "sandwich" core, from a storage jar decorated with a flat, finger impressed knob. Average wall th.: 0.9 cm.
29. Body fragment. Red, tempered with chaff and sand, from a well-fired, large storage jar made from finely levigated clay, covered with a dark red slip. The stub of a horizontally set lug handle can be seen on the sherd. Average wall th.: 1.4 cm.
30. Body fragment. Red finger impressed rib fragment from a poorly fired vessel with rough, sandy surface. Wall th.: 1.2 cm.
31. Clay foot. Reddish-brown, tapering clay foot tempered with chaff and sand that could equally have been part of a small altar or a vessel. H.: 3.5 cm. Nos 31–33 were probably part of the same object.

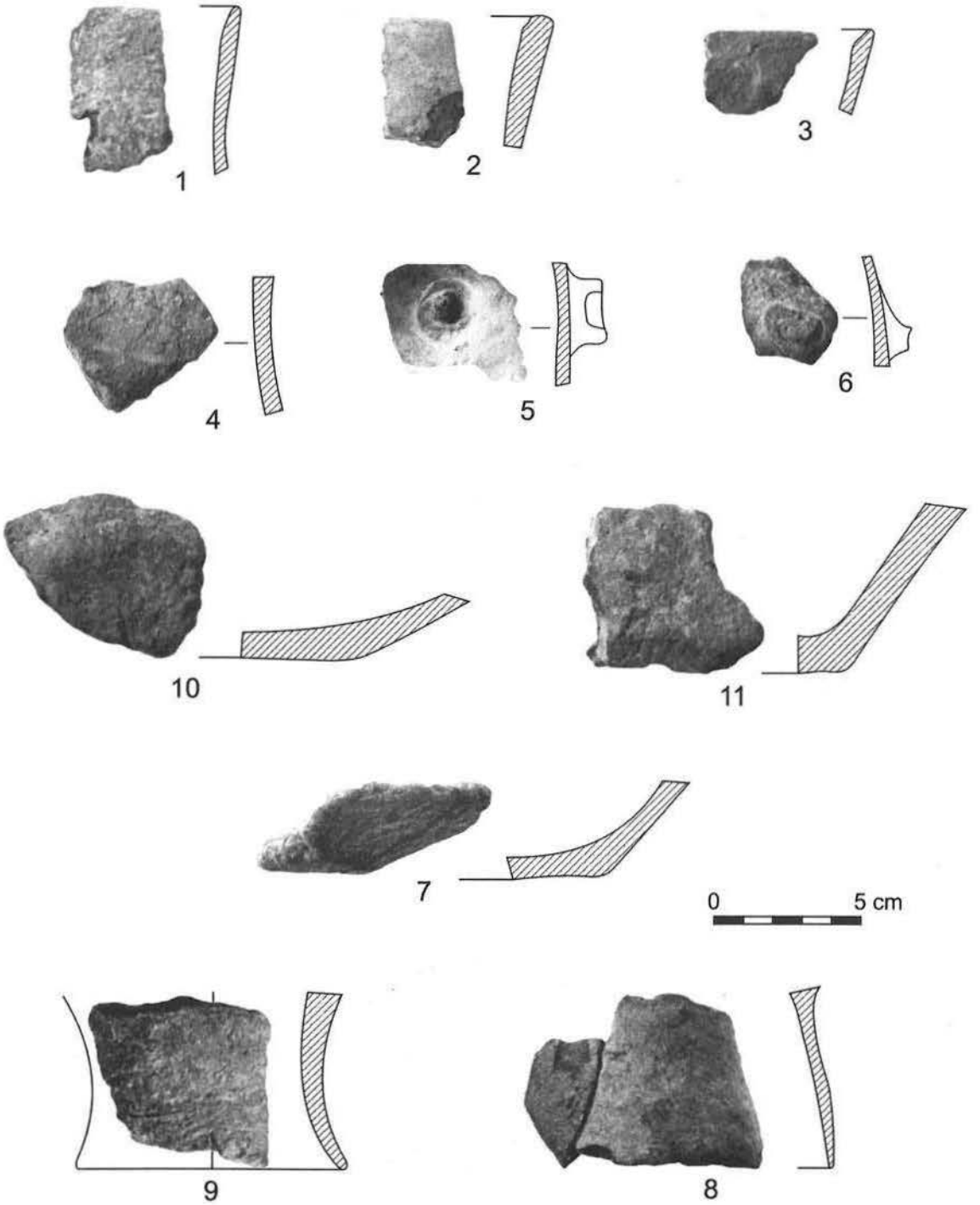


Fig. 49. Finds from Feature 12

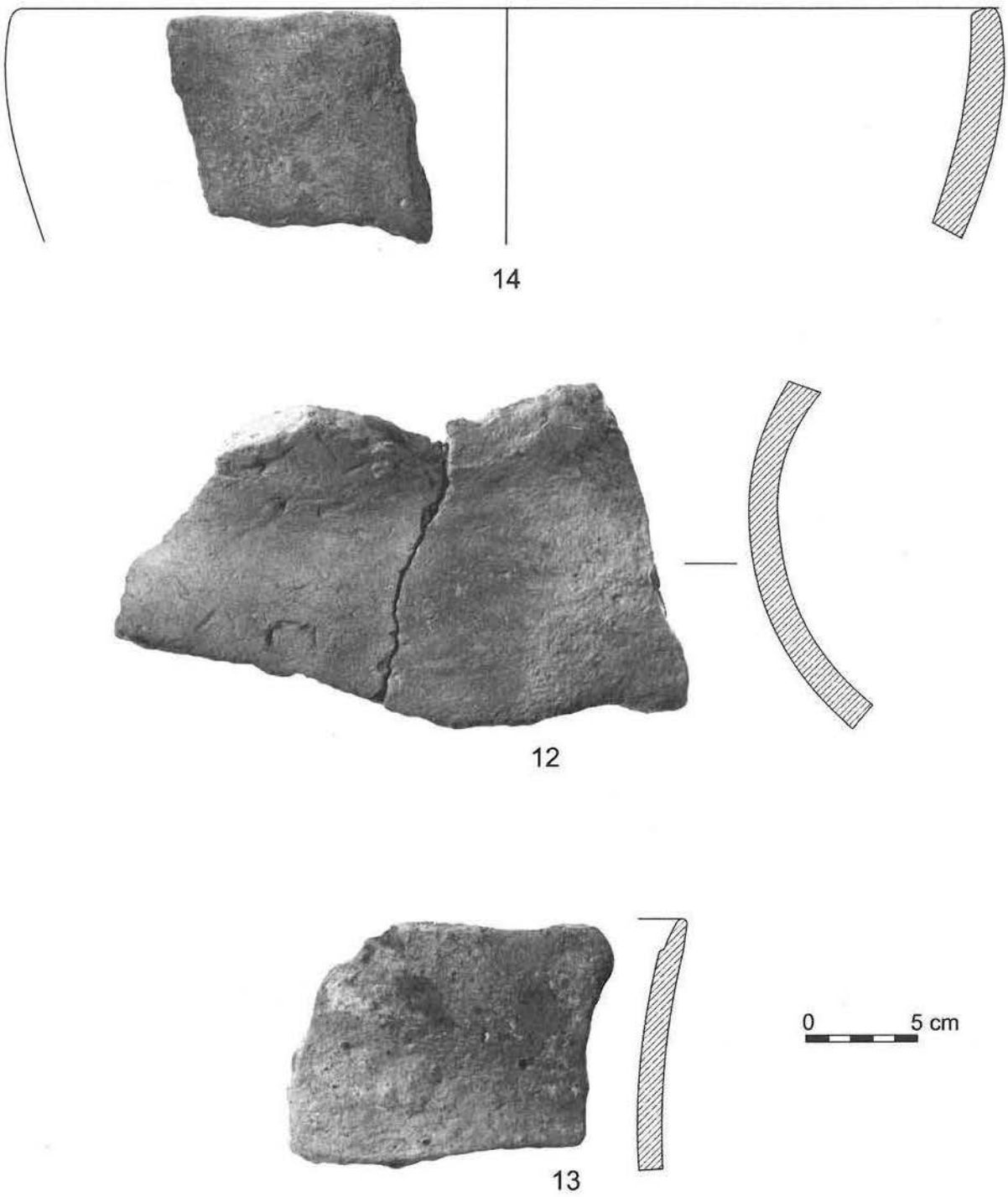


Fig. 50. Finds from Feature 12

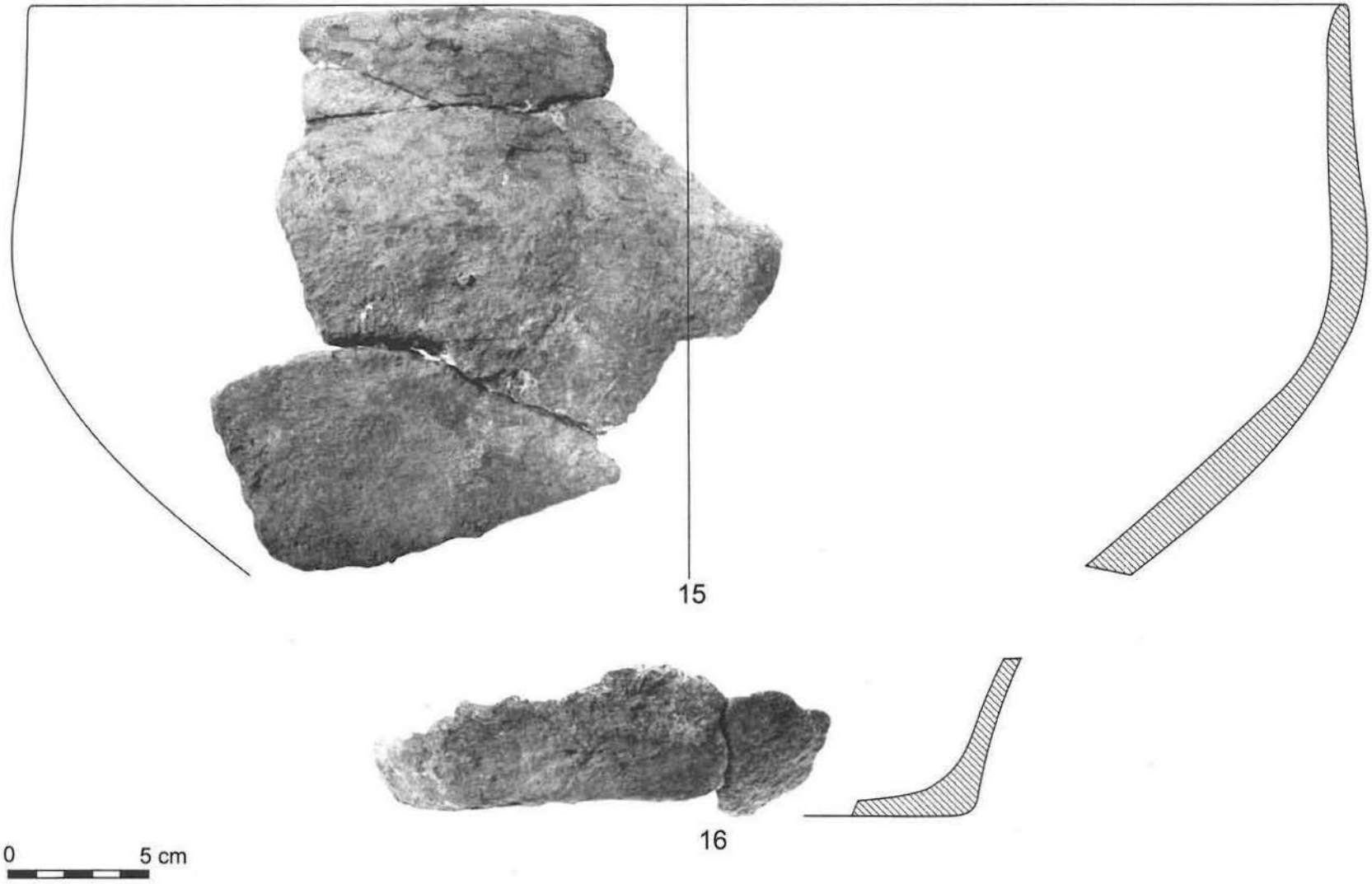


Fig. 51. Finds from Feature 12

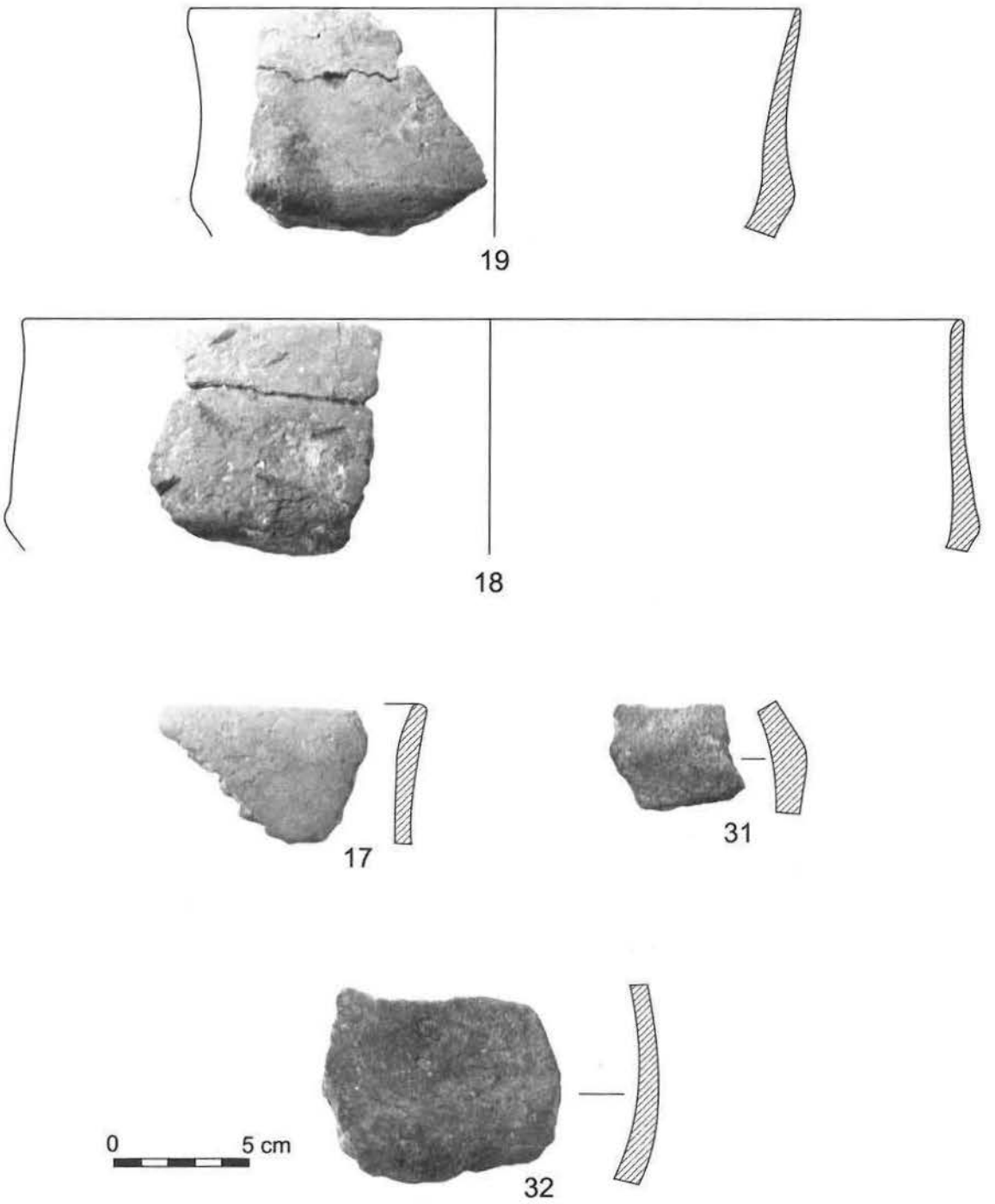


Fig. 52. Finds from Feature 12

Finds[15] *(Figs 56–58)*

A total of 396 pottery fragments and some chipped stone implements were recovered from this feature.

1. Rim fragment. Bright red, tempered with sand, from a slightly porous, globular bowl with inturned rim made from finely levigated clay, decorated with two horizontal rows of larger and two rows of smaller pinched decorations under the rim. The rain motif is easily recognizable, even though it was created from pinched decorations and not the usual incised motifs. The upper two rows suggest a larger, probably male hand, the clay was apparently pinched with the thumb. The lower two rows has smaller pinches with traces of the finger tips, suggesting the hand of a child.[16] Rim diam.: 30 cm, wall th.: 0.4–0.6 cm.
2. Rim and body fragment. Reddish-brown, tempered with sand, from a well-fired, globular bowl with inturned rim made from finely levigated clay, decorated with two rows of finger impressions under the rim. The belly of the vessel was polished with a twig or a piece of straw both on its exterior and interior. Rim diam.: 27 cm, wall th.: 0.6–0.7 cm.
3. Rim fragment. Dark grey and light red, from the neck of a thick-walled storage jar with outturned rim. A 6.5 cm wide band under the rim – down to the beginning of the neck – was decorated using the black-topped technique. Rim diam.: 29 cm, wall th.: 1.1 cm.
4. Rim fragment. Bright red, tempered with chaff and sand, "sandwich" core, from a large, thick-walled, globular vessel with inturned rim. Rim diam.: c. 30 cm, wall th.: 1.2–2.0 cm.
5. Body fragment. Bright reddish-brown, tempered with sand, from a well-fired, large bowl, made from finely levigated clay. Traces of polishing probably done with a twig or a piece of straw can be seen on the upper part and above the stub of a broken-off knob. Wall th.: 0.7 cm.
6. Base fragment. Grey and brownish-red, tempered with chaff and sand, "sandwich" core, from a flat bowl. Wall th.: 1.1 cm.
7. Body fragment. Bright red, tempered with chaff, from a porous pot (secondarily burnt?) made from poorly levigated clay and decorated with a flat, round, finger impressed knob. Wall th.: 0.8 cm.
8. Body fragment. Light red and grey patches, tempered with chaff and sand, from the belly of a small, poorly fired, coarse biconical vessel made from poorly levigated clay. Wall th.: 0.4–0.6 cm.
9. Body fragment. Light red, tempered with sand, from the belly of a biconical vessel covered with a polished, dark red slip both on its exterior and interior. The belly is decorated with a small, oval knob and a pattern of obliquely smoothed-in lines beside the knobs and straight smoothed-in lines on the carination. Wall th.: 0.5–0.6 cm.
10. Rim fragment. Light red, tempered with sand, from a well-fired, globular vessel with inturned rim made from finely levigated clay. Rim diam.: 14 cm. wall th.: 0.4 cm.
11. Fragment of a pedestalled vessel. Dark red, tempered with chaff and sand, "sandwich" core, from a pedestal, covered with a polished, dark red slip on the exterior. Wall th.: 1.6 cm.
12. Body fragment. Red, tempered with chaff, sand and crushed pottery, from a poorly fired, thin-walled storage jar, made from poorly levigated clay. Average wall th.: 0.9 cm.
13. Rim fragment. Bright red, tempered with chaff, sand and crushed pottery, from a poorly-fired, porous small pot with inturned rim, made from poorly levigated clay. Rim diam.: 16 cm, wall th.: 0.4–0.7 cm.
14. Lug. Black and red mottled large, bipartite lug handle tempered with chaff and sand, from a poorly-fired, large storage jar.
15. Rim fragment. Dark red, tempered with chaff and sand, from a red slipped, hemispherical bowl made from poorly levigated clay and covered with a polished, dark red slip both on its exterior and interior. Rim diam.: 17 cm, wall th.:0.9 cm.
16. Handle. Vessel handle with light red and black patches, made from poorly levigated clay tempered with chaff and sand.

[15] Inv. no. 93.115.1–22; 2000.102.1–6.

[16] Again, I would here like to thank György Cseplák for his analyses.

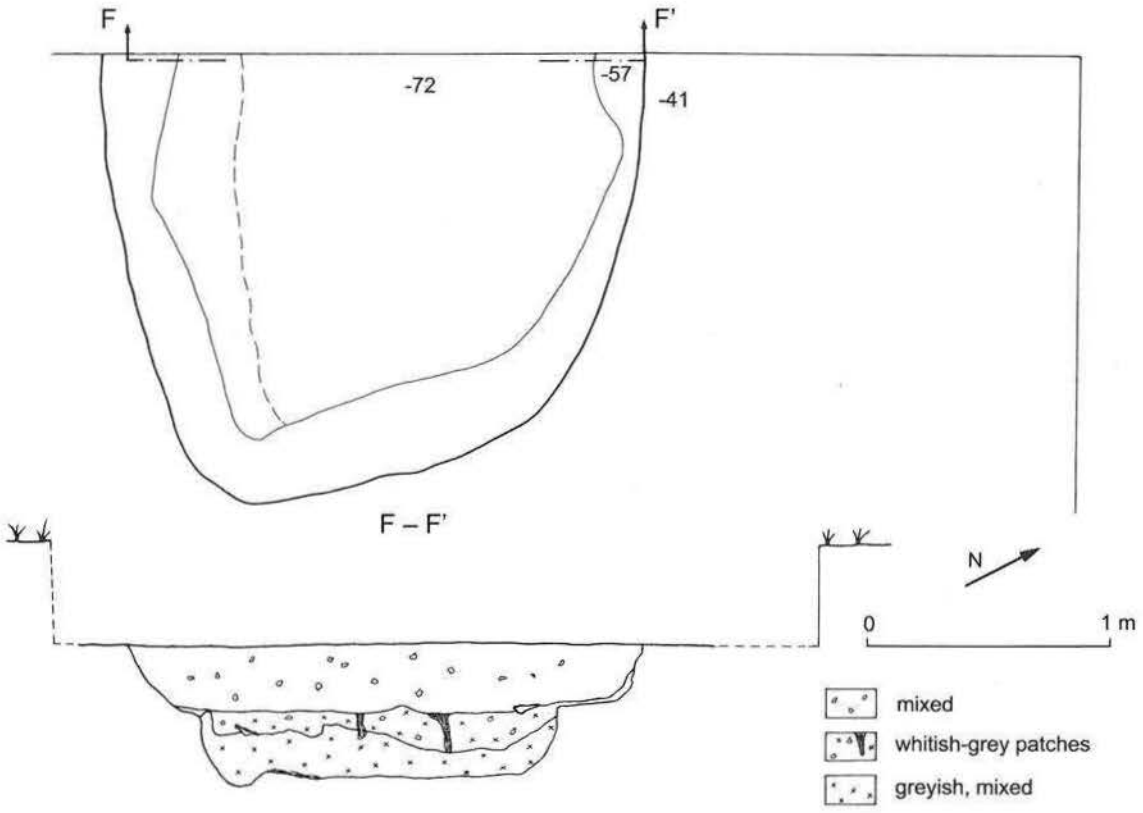


Fig. 55. Feature 14

17. Fragment of a pedestalled vessel. Light red, tempered with chaff and sand, "sandwich" core, from a poorly fired, low pedestalled vessel made from finely levigated clay. Diam. of juncture: 7 cm, wall th.: 0.5–1.3 cm.

Feature 15 *(Fig. 59)*

Small, rectangular, shallow pit with rounded corners lying east of Feature 14 and near Feature 12, i.e. the long pits flanking the house. Its fill was made up of burnt debris, under which lay the usual greyish, granular, hard-packed layer with the finds. Many of the pottery fragments came from pots that had been crushed by the falling timbers. A large grinding stone lay beside the broken vessels. The average depth of the shallow pit was 50–56 cm. The grey layer containing the finds was rather thin and we soon reached the virgin soil underneath it.

Finds[17] *(Figs 60–65)*

A total of 383 pottery fragments, 17 burnt daub fragments (2.1 kg) and 1 grinding stone were recovered from this feature.

1. Vessel profile. Red, tempered with chaff and sand, from a well-fired, biconical bowl made from finely levigated clay and covered with a polished, dark red slip on its exterior. Rim diam.: 30.5 cm, wall th.: 0.6–1.2 cm.
2. Body fragment. Light red with grey patches, tempered with chaff and sand, from a vessel with uneven surface made from poorly levigated clay. Wall th.: 0.7 cm.

[17] Inv. no. 93.116.1–46.

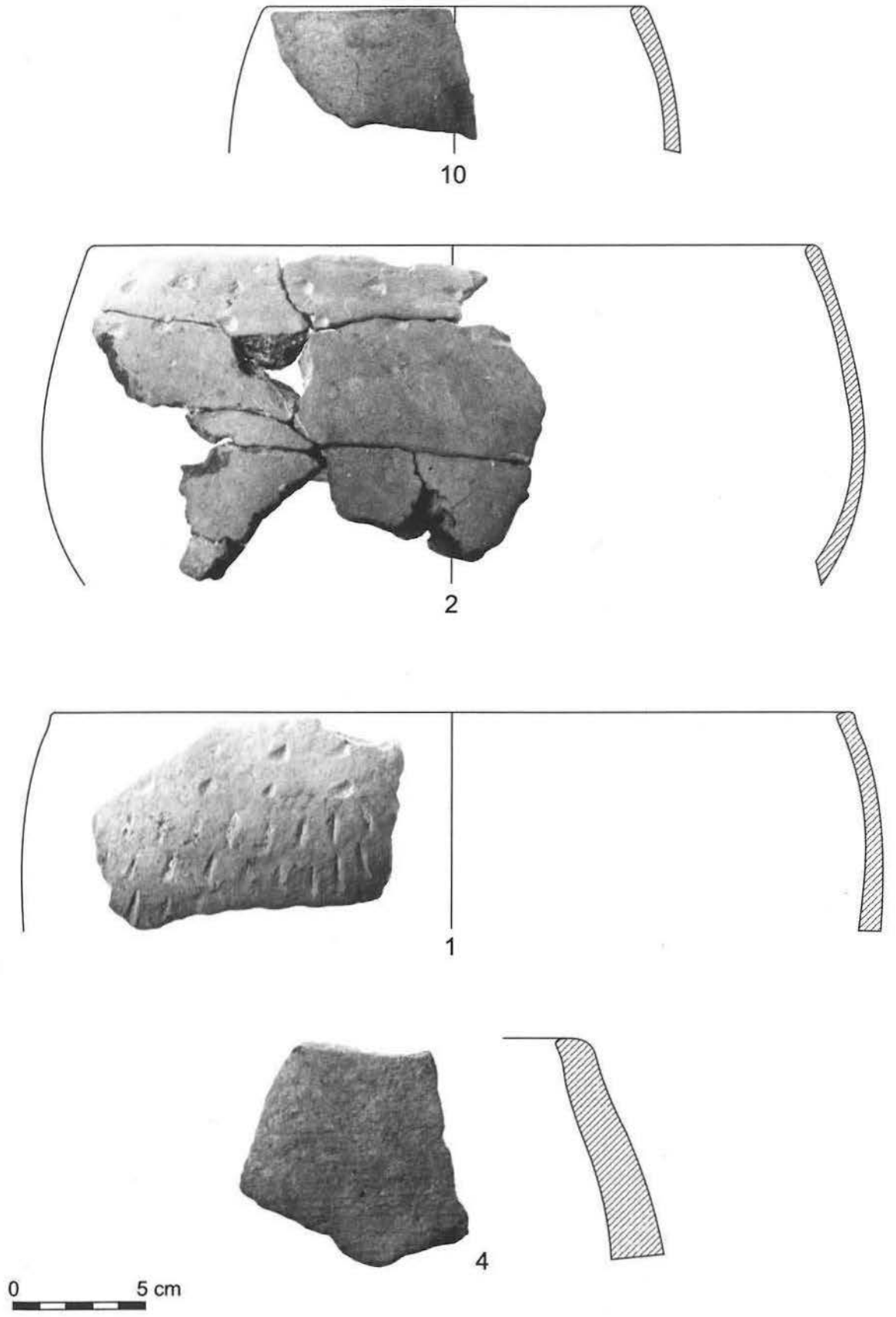


Fig. 56. Finds from Feature 14

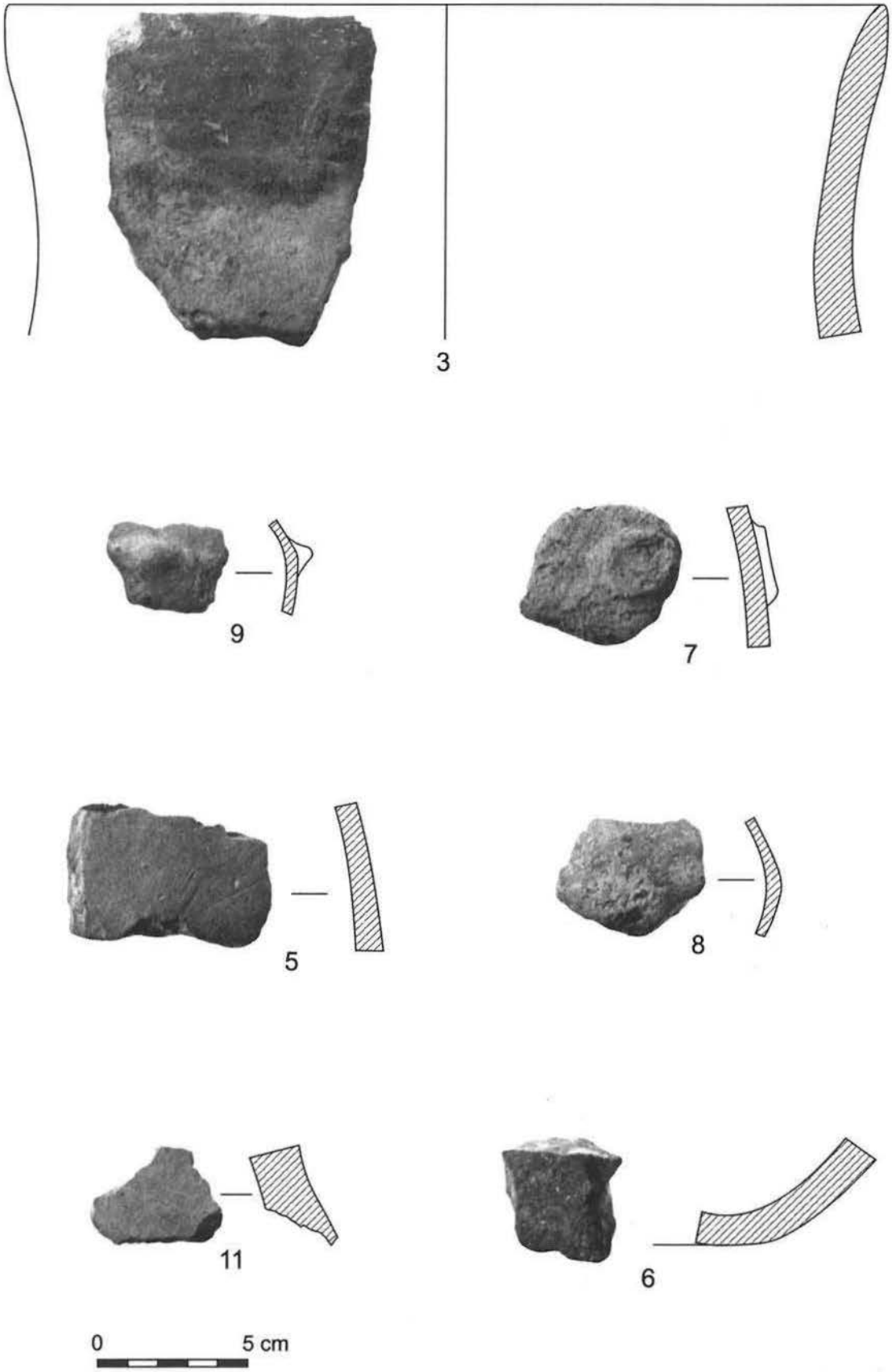


Fig. 57. Finds from Feature 14

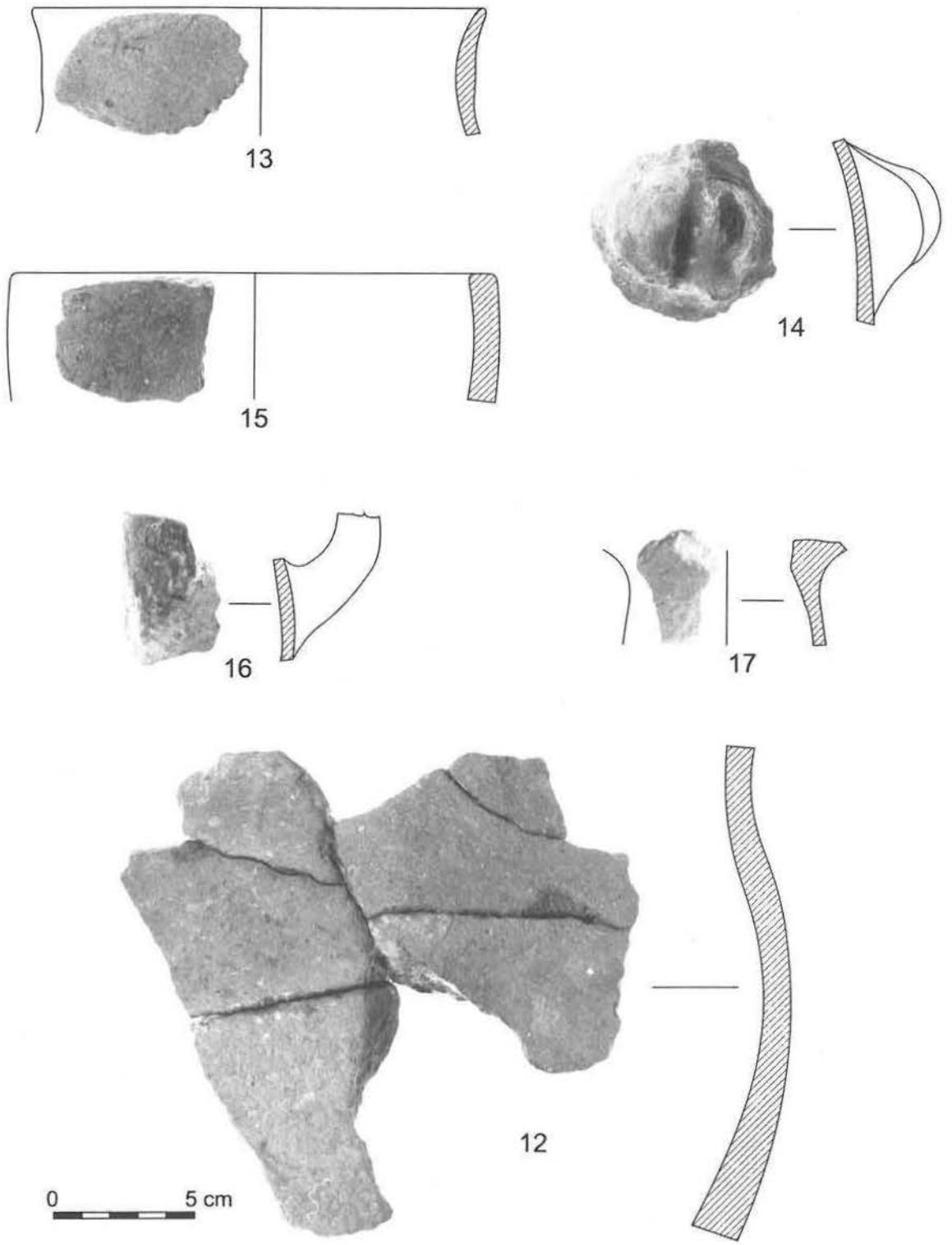


Fig. 58. Finds from Feature 14

3. Body fragment. Dark grey exterior, yellowish interior, tempered with chaff and sand, from a vessel made from poorly levigated clay and fired at a low temperature. It is decorated with a finger impressed, horizontally set rib. Wall th.: 0.8–1.1 cm.
4. Body fragment. Red exterior, reddish-brown interior, tempered with chaff and sand, "sandwich" core, from a poorly fired vessel decorated with an applied rib. Wall th.: 1.2 cm.
5. Body fragment. Bright red, tempered with chaff and sand, from a larger vessel, decorated with a horizontally set finger impressed rib. Wall th.: 1.3 cm.
6. Body fragment. Bright red, tempered with chaff and sand, from a thick-walled storage jar decorated with a bipartite lug handle. Wall th.: 1.6 cm.
7. Body fragment. Bright red, tempered with chaff and sand, "sandwich" core, from a large storage jar decorated with a bipartite lug handle. Wall th.: 0.6–1.1 cm.
8. Rim fragment with handle. Red, tempered with chaff and sand, "sandwich" core, from a porous storage jar with a horizontally set handle under the rim. Wall th.: 0.4 cm.
9. Handle. Grey and reddish-brown, tempered with chaff and sand, from a poorly fired pot. The handle is cylindrical in section.
10. Handle. Reddish-brown exterior, black interior, tempered with chaff and sand, from a poorly fired, larger storage jar with worn, porous surface.
11. Body fragment with handle. Bright red, tempered with chaff and sand, from a storage jar with porous surface. Traces of three polished bands under the handle.
12. Fragment of a pedestalled vessel. Dark grey exterior, yellow interior, tempered with chaff and sand, from a conical pedestal made from poorly levigated clay. Lower diam.: 10 cm, wall th.: 0.5–0.8 cm.
13. Fragment of a pedestalled vessel. Red, tempered with chaff and sand, from a conical pedestal covered with a finely polished, dark red slip on its exterior. The interior is rough. Wall th.: 1.1–1.7 cm.
14. Fragment of a pedestalled vessel. Reddish, tempered with chaff and sand, from a low, conical pedestal covered with a polished, dark red slip on its exterior. The interior is rough. Wall th.: 0.8–1.5 cm.
15. Fragment of a pedestalled vessel. Light red, tempered with chaff and sand, "sandwich" core, from the upper part of a high, conical pedestal. Wall th.: 0.8–2.7 cm.
16. Rim fragment. Reddish-grey, tempered with chaff and sand, from a biconical vessel covered with a polished, dark red slip on its exterior. Wall th.: 0.3–0.7 cm.
17. Body fragment. Bright red exterior, grey interior, tempered with chaff and sand, "sandwich" core, from the belly of a large vessel, decorated with a row of finger impressions. Wall th.: 1.0 cm.
18. Lug. Light red, tempered with chaff and sand, from a poorly fired, large pot. The oval lug handle with a finger impression in its centre was set horizontally.
19. Lug. Light red, tempered with chaff and sand, from a poorly fired, large pot. The oval lug handle was set horizontally.
20. Handle. Light red, tempered with chaff and sand, from a larger vessel with worn surface.
21. Body fragment. Blackish-grey exterior, bright red interior, tempered with chaff and sand, from a poorly fired vessel with uneven surface. Wall th.: 1.2–1.3 cm.
22. Body fragment. Dark grey exterior with red patches, bright red interior, tempered with chaff, from a large storage jar with uneven surface. Wall th.: 0.7 cm.
23. Body fragment. Blackish-grey exterior, bright red interior, tempered with chaff and sand, from a large storage jar with uneven surface. Wall th.: 1.0–1.4 cm.
24. Clay plaque. Light red, tempered with chaff and sand, from a burnt baking platter with uneven surface. Its original size was probably twice of what has survived. Th.: 3.0–3.5 cm.
25. Rim fragment. Light reddish-brown, tempered with chaff and sand, from a bomb shaped vessel with a slightly worn surface. The vessel is black-topped and decorated with three uneven, obliquely incised shallow lines. Rim diam.: 15 cm, wall th.: 0.4–0.6 cm.
26. Rim fragment. Greyish-red exterior, light red interior, tempered with chaff and sand, from a large, bomb shaped vessel with slightly inturned rim. Rim diam.: 28 cm, wall th.: 1.3 cm.

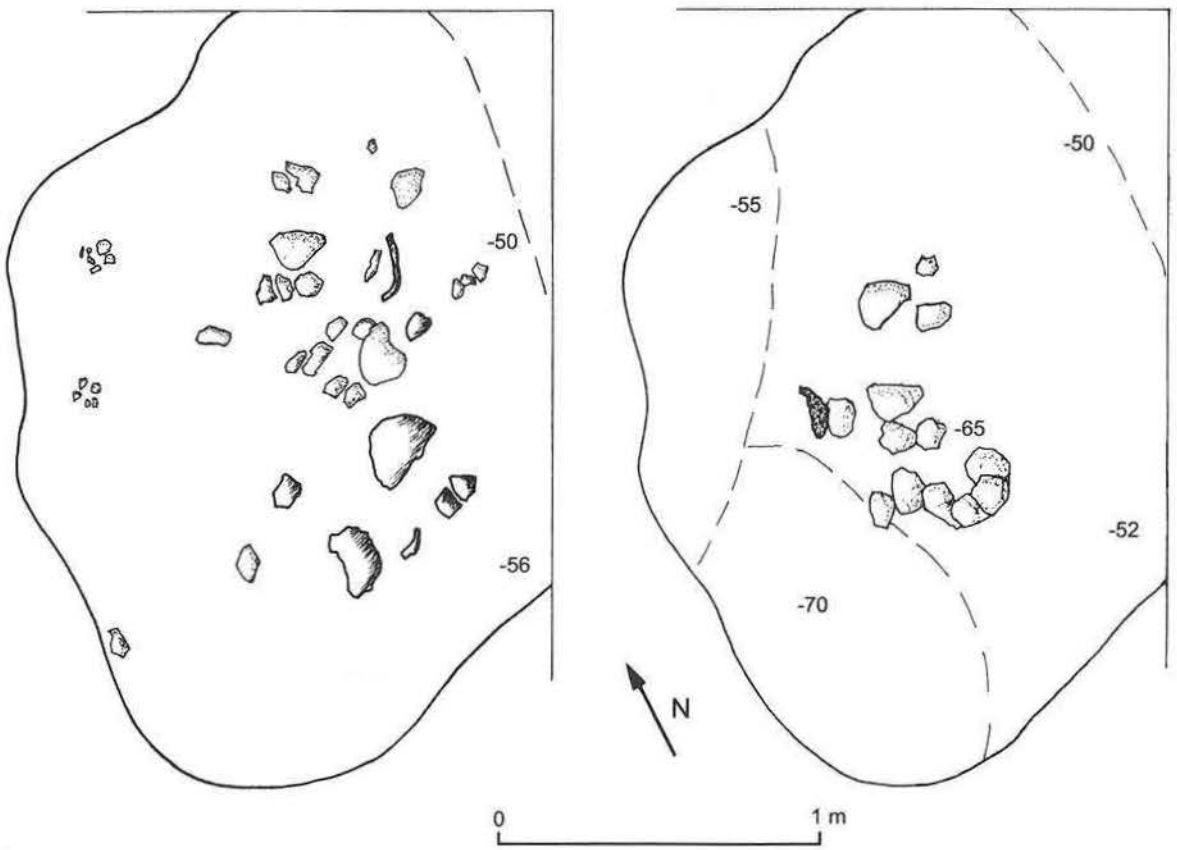


Fig. 59. Feature 15

27. Rim and body fragment. Bright red, tempered with chaff and sand, from a vessel with a rounded carination, covered with a polished, dark red slip both on its exterior and interior. Rim diam.: 22 cm, wall th.: 0.4–1.2 cm.
28. Rim fragment. Dark greyish exterior, light red interior, tempered with chaff and sand, from a biconical bowl with worn surface, decorated with a small round knob on the carination. The rim is decorated with finger impressions. Rim diam.: 15 cm, wall th.: 0.4–0.5 cm.
29. Rim and body fragment. Red, tempered with chaff and sand, from a conical bowl, covered with a polished, dark red slip both on its exterior and interior. Rim diam.: 29 cm, wall th.: 0.5–1.3 cm.
30. Rim and body fragment. Grey and reddish-brown exterior, light red interior, tempered with chaff and sand, "sandwich" core, from a large vessel with cylindrical neck. Rim diam.: 32 cm.
31. Rim and body fragment. Greyish-brown exterior, light red interior, tempered with chaff and sand, "sandwich" core, from a large, bomb shaped vessel with cylindrical neck. Remains of a painted pattern on the worn exterior. Rim diam.: 41 cm, wall th.: 0.9–1.0 cm.
32. Base fragment. Reddish-brown, tempered with chaff and sand, from a large, bomb shaped vessel, decorated with a finger impressed knob 5 cm above the base. Wall th.: 1.1–2.2 cm.

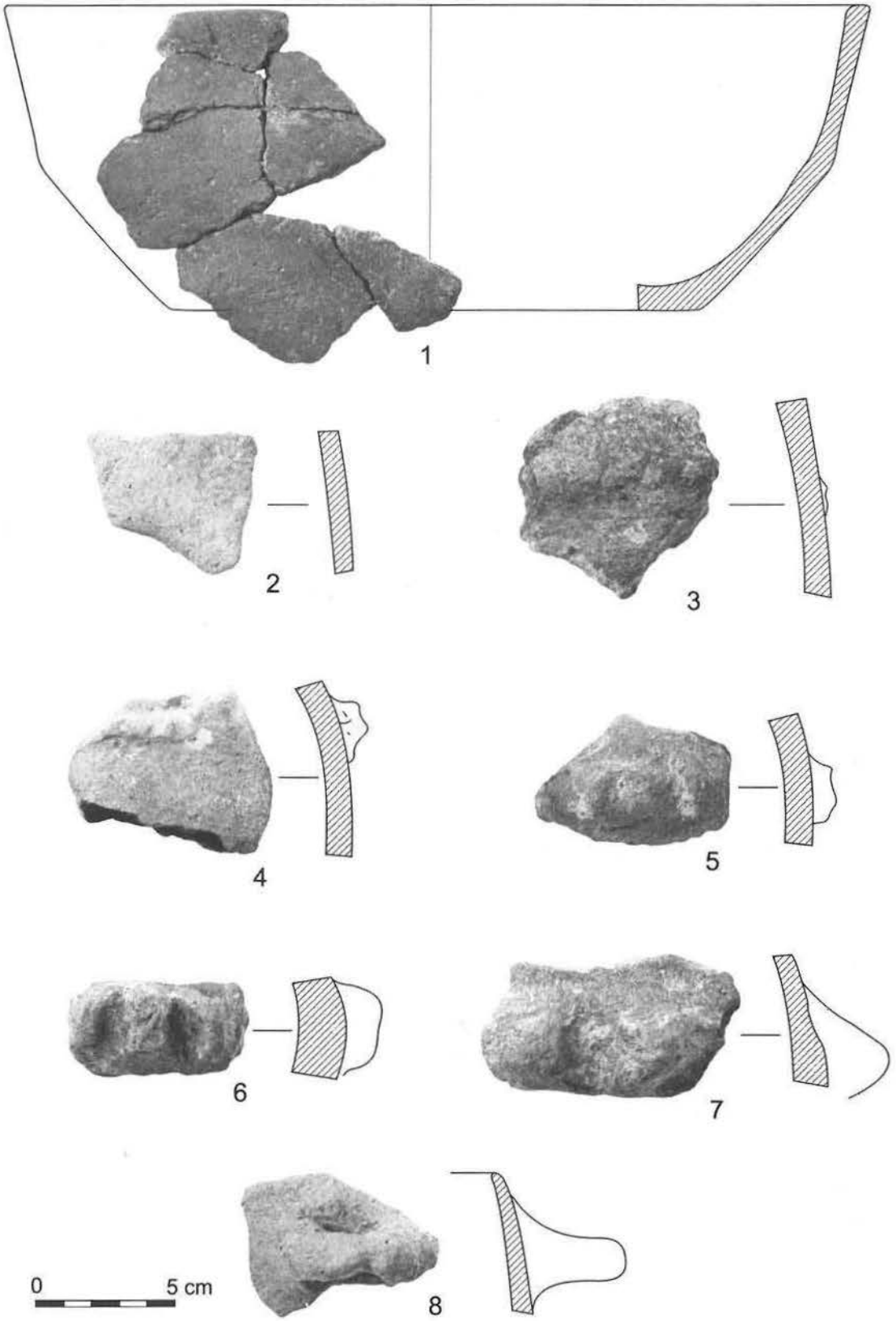


Fig. 60. Finds from Feature 15

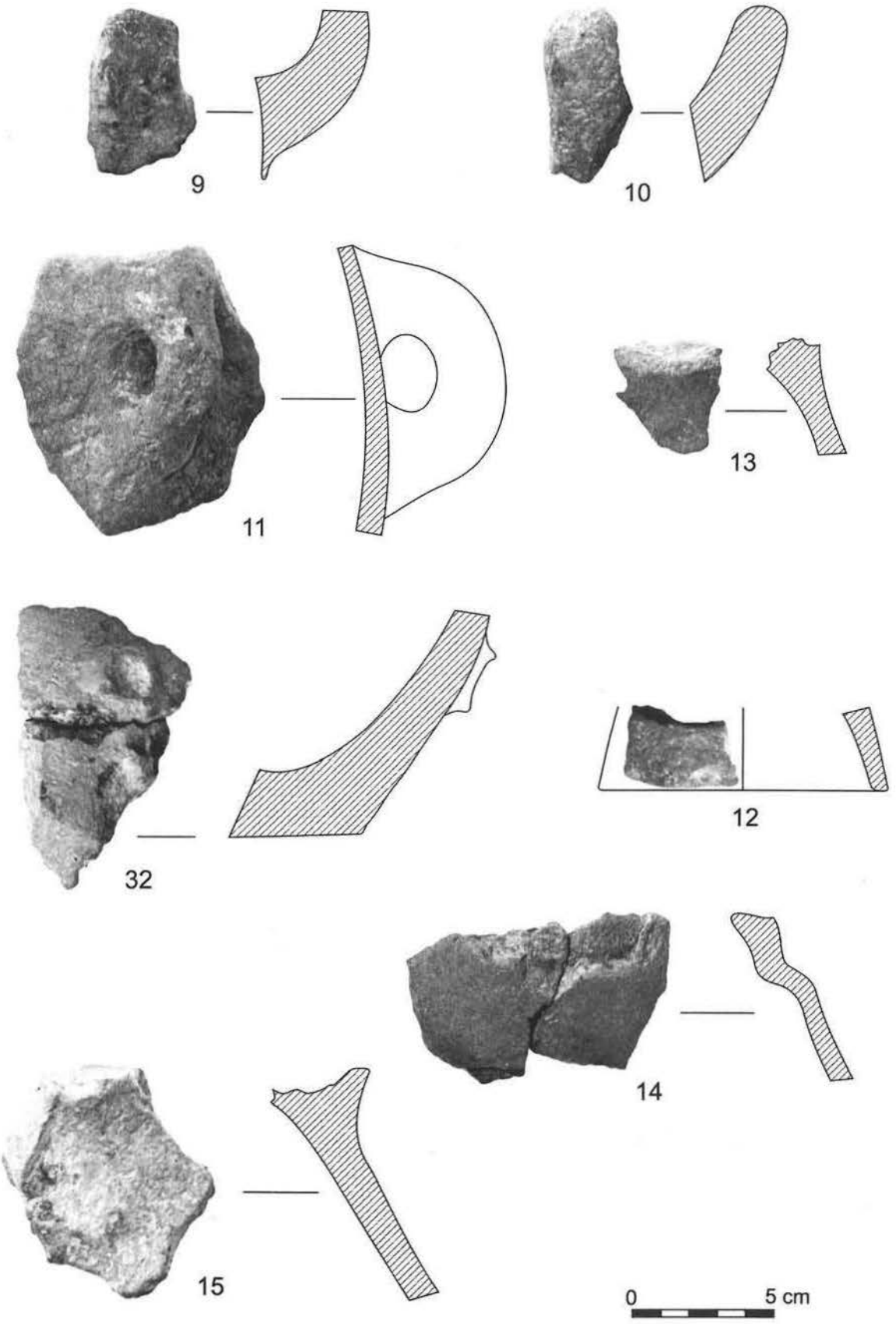


Fig. 61. Finds from Feature 15

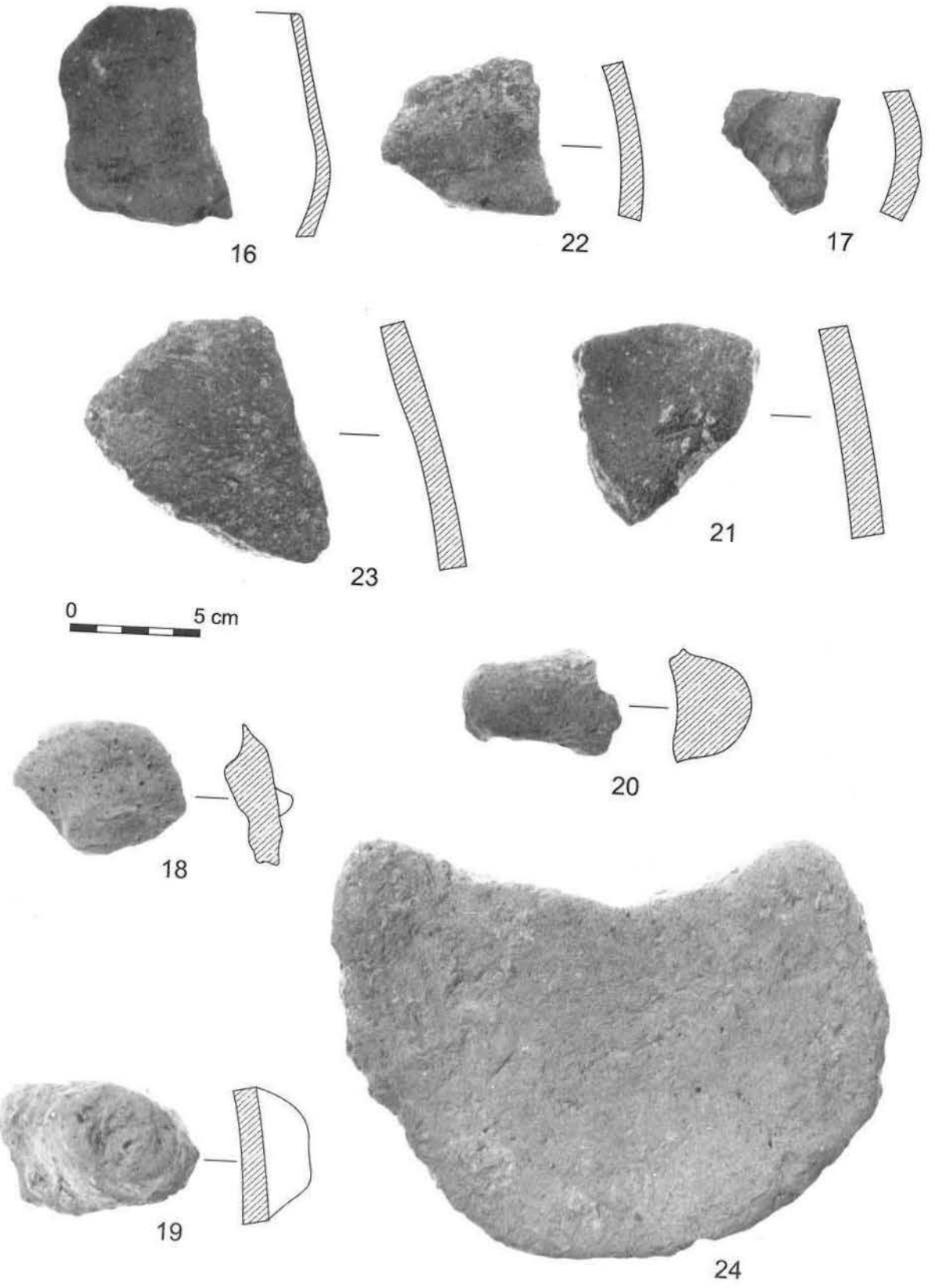


Fig. 62. Finds from Feature 15

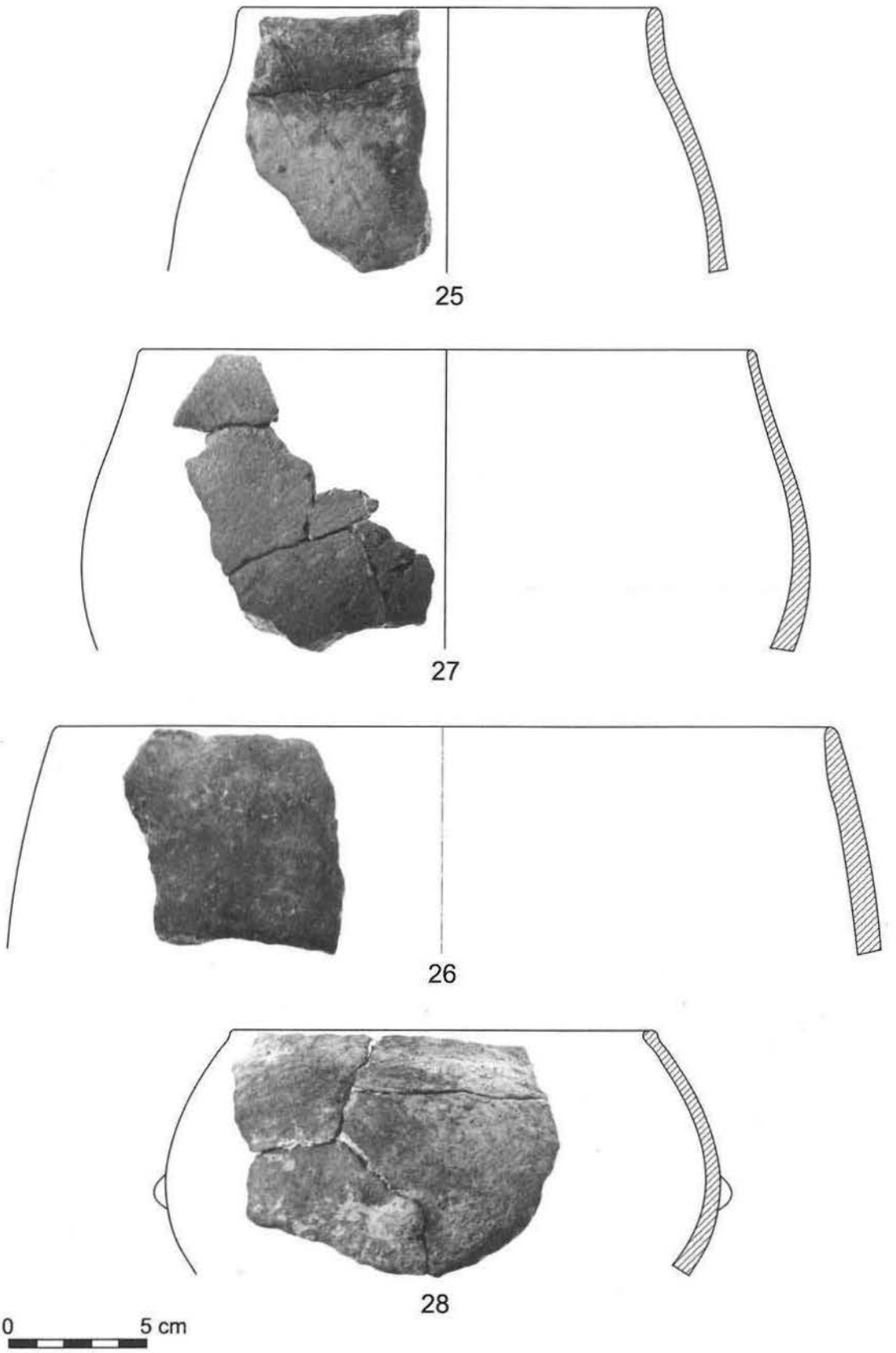
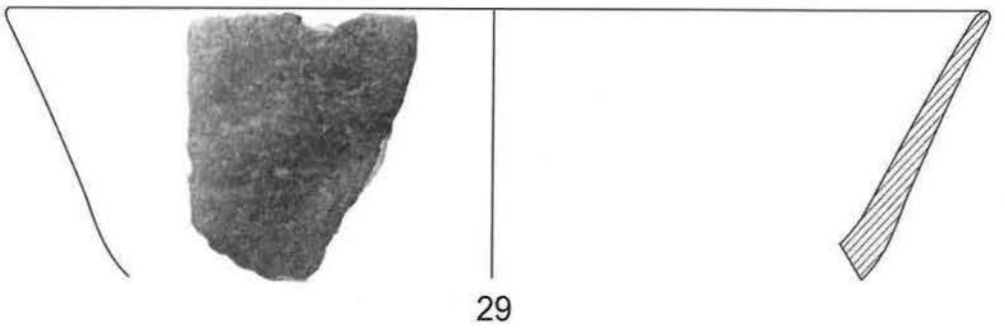


Fig. 63. Finds from Feature 15



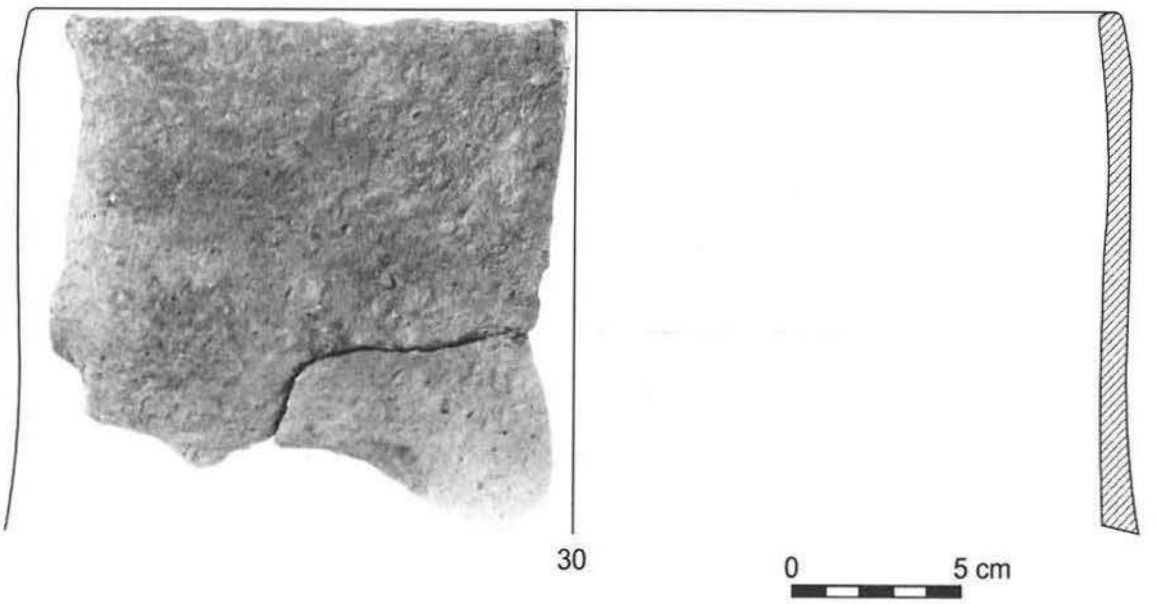


Fig. 64. Finds from Feature 15

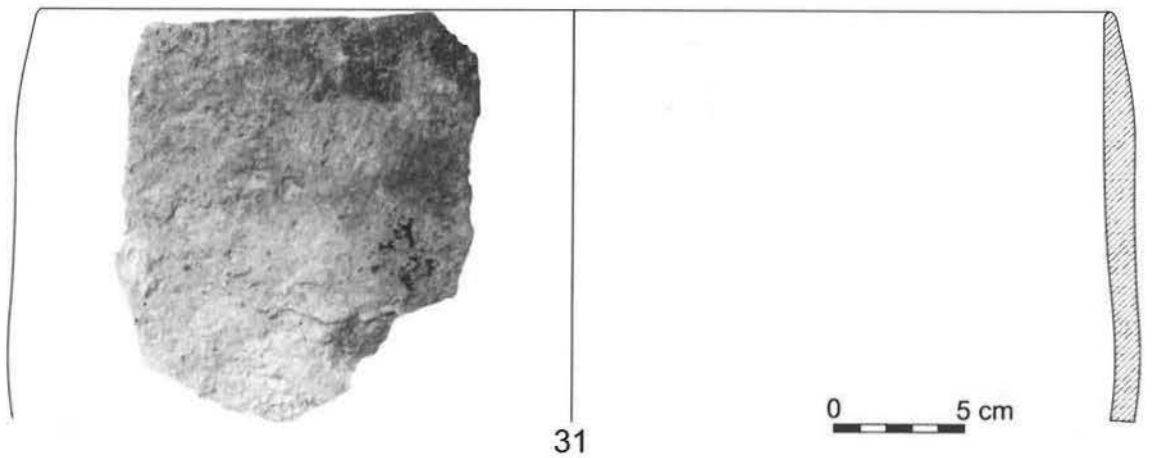


Fig. 65. Finds from Feature 15

Feature 16 *(Fig. 66)*

Long pit, lying north of Feature 11, with an identical orientation. Its fill showed a slight difference from the fill of Feature 11 and Features 2, 8, 9 and 12 on the other side. The fill of this pit was uniform, differing little either in colour or in texture from the virgin soil with iron concretions. The pit contained few finds; most of the recovered sherds were larger, more remarkable pottery fragments. It would appear that this pit was infilled more rapidly than the other similar pits of the settlement.

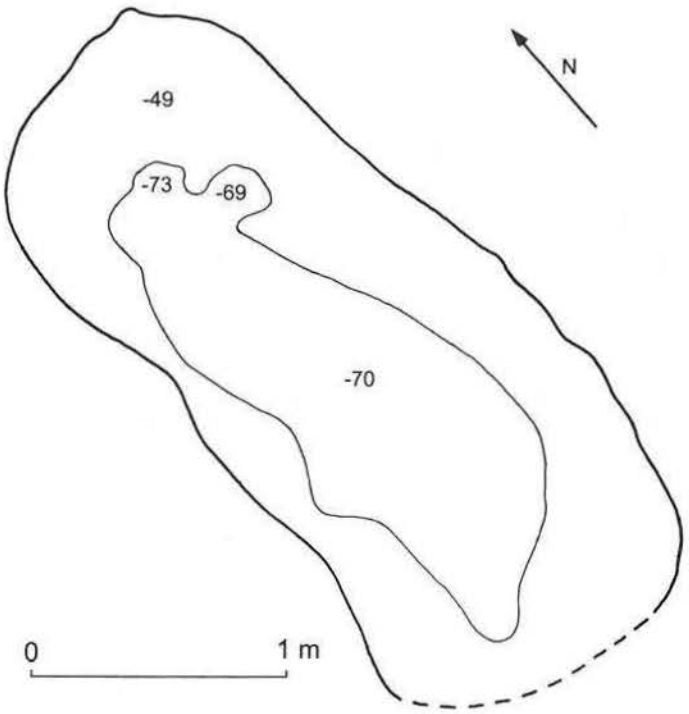


Fig. 66. Feature 16

Finds[18] *(Figs 67–71)*

A total of 238 pottery fragments and some chipped stone implements were recovered from this feature.

1. Rim fragment. Red, tempered with chaff and sand, "sandwich" core, from a thick-walled, poorly fired, large bowl with inturned rim, made from poorly levigated clay and decorated with two horizontal lines under the rim. Rim diam.: 38 cm, wall th.: 1–1.2 cm.
2. Rim fragment. Red, tempered with chaff and sand, from a well-fired, biconical bowl made from carefully levigated clay and covered with a polished, dark red slip both on its exterior and interior. The upper part is slightly incurving, the carination is light. Rim diam.: 17 cm, wall th.: 0.6 cm.
3. Body fragment. Red, tempered with chaff and sand, from a well-fired, biconical bowl made from finely levigated clay and covered with a polished, dark red slip both on its exterior and interior. The upper part is slightly incurving, the carination is smooth. Rim diam.: 20 cm, wall th.: 0.5–0.9 cm.
4. Rim fragment. Red, tempered with chaff and sand, from a well-fired bowl with inturned rim made from finely levigated clay and covered with a polished, dark red slip both on its exterior and interior. Rim diam.: 16 cm, wall th.: 0.4–0.7 cm.

[18] Inv. no. 2000.87.1–8.

5. Rim fragment. Yellowish-brown, tempered with chaff and sand, from a poorly fired, wide mouthed bowl made from finely levigated clay. Rim diam.: 23 cm, wall th.: 0.6–0.8 cm.
6. Rim fragment. Red, tempered with chaff and sand, from a well-fired, conical bowl made from finely levigated clay. Rim diam.: 15 cm, wall th.: 0.5–0.8 cm.
7. Body fragment. Blackish-red, tempered with chaff and sand, "sandwich" core, from a well-fired, biconical bowl with marked carination, made from finely levigated clay and polished both on its exterior and interior. The upper part in incurving, the carination is decorated with two vertical grooves. Diam. of carination: 13 cm, wall th.: 0.4–0.8 cm.
8. Body fragment. Bright red, tempered with chaff, sand and crushed pottery, from a poorly fired, perhaps secondarily burnt thick-walled storage jar with worn and porous surface, made from poorly levigated clay. Wall th.: 1.4 cm.
9. Body fragment. Reddish-brown, tempered with chaff and sand, "sandwich" core, from a poorly fired, large, globular jar decorated with a bipartite lug handle, made from poorly levigated clay. Wall th.: 0.7–1,2 cm.
10. Body fragment. Bright red, tempered with sand and crushed pottery, "sandwich" core, from a porous, perhaps secondarily burnt large storage jar made from poorly levigated clay and decorated with a large, horizontally set lug handle. Wall th.: 1.0–1.4 cm.
11. Fragment of a pedestalled vessel. Red with grey patches, tempered with chaff and sand, "sandwich" core, from a poorly fired pedestal, made from finely levigated clay and polished both on its exterior and the interior of the vessel set on the pedestal. Diam. of juncture: 11.5 cm.
12. Base fragment. Bright red, tempered with chaff and sand, from a poorly fired and perhaps secondarily burnt large, thin-walled bowl made from poorly levigated clay. Base diam.: 14.5 cm.
13. Fragment of a rectangular object. Light red, tempered with chaff and sand, from the corner of a well-fired, rectangular object made from poorly levigated clay. There is a small depression at the corner of

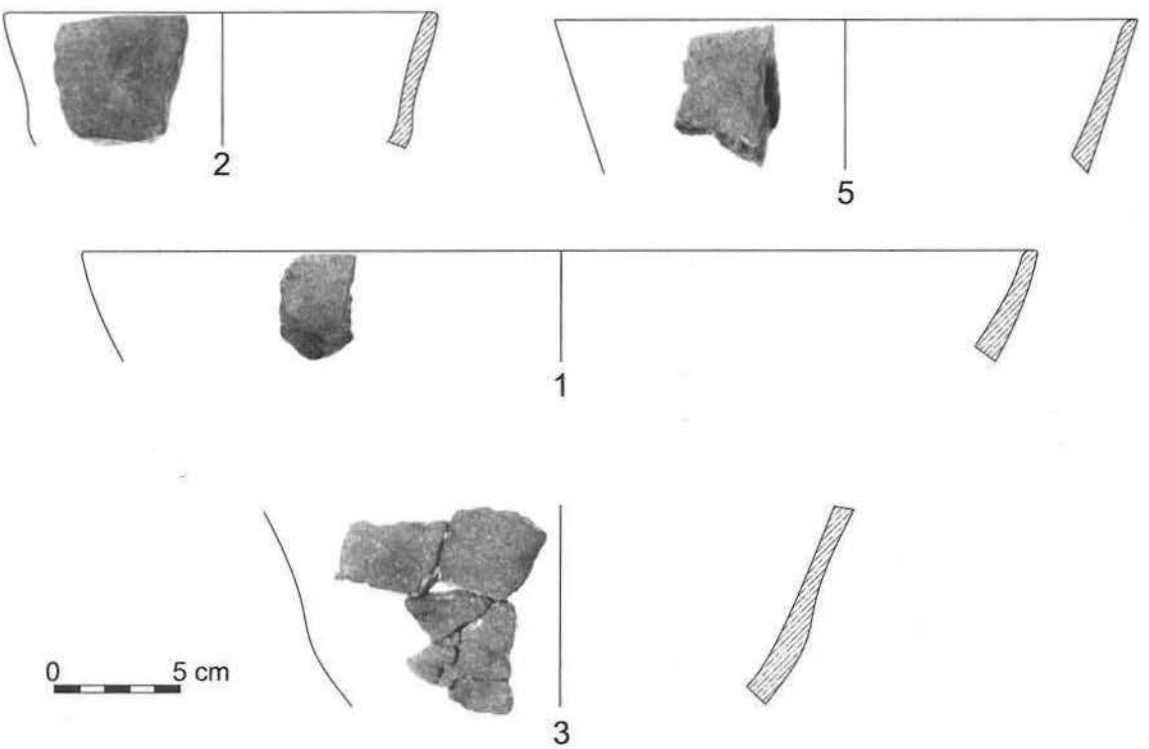


Fig. 67. Finds from Feature 16

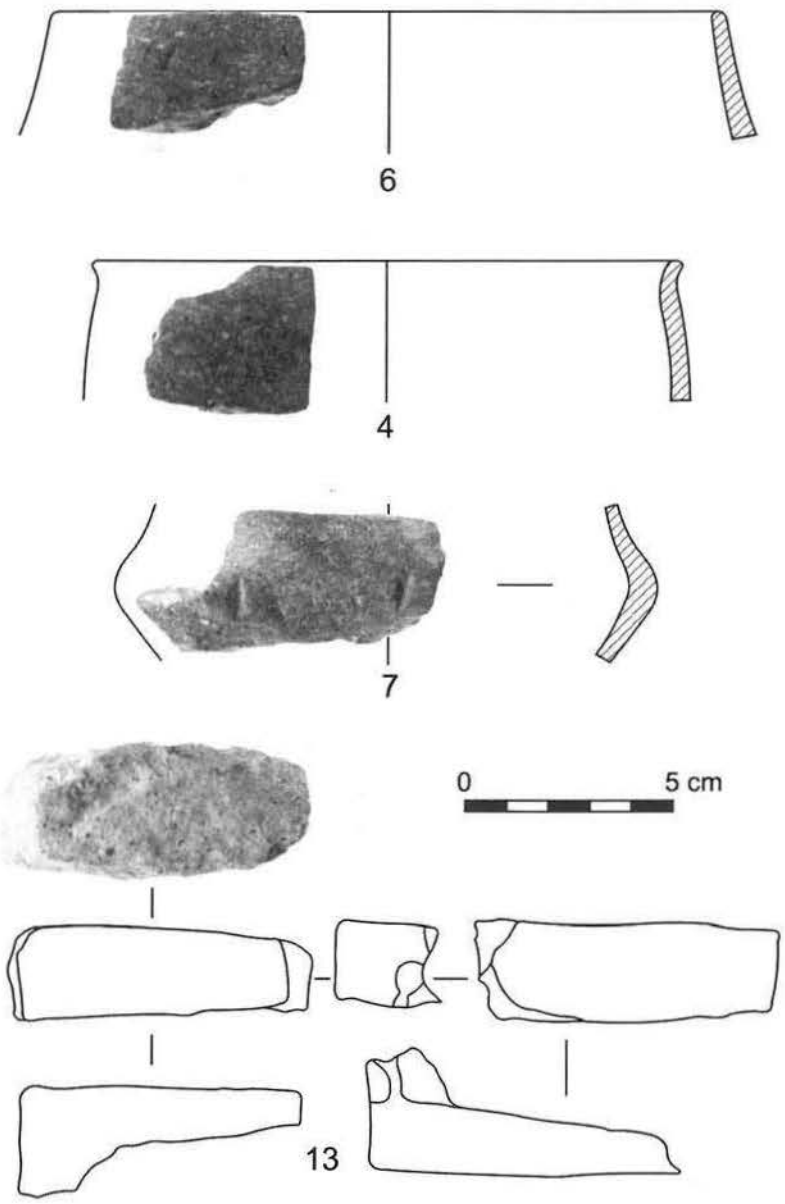


Fig. 68. Finds from Feature 16

the lower part, perhaps the juncture of the foot. Although its function is unclear owing to the worn surface, it may have come from a rectangular object with incurving interior set on clay feet (perhaps from an altar). H.: 3.3 cm, w.: 7 cm, wall th.: 3.2 cm.

14. Vessel assembled from its fragments. Red, well-fired, deep biconical bowl tempered with chaff and sand, made from finely levigated clay, covered with a polished, dark red slip both on its exterior and interior. The carination is decorated with three finely incised curved lines on one side, while the other side is ornamented with two curved, smoothed-in lines under rim and a third smoothed-in line separate from the other two. H.: 1.2 cm, rim diam.: 15.5 cm, base diam.: 6 cm.

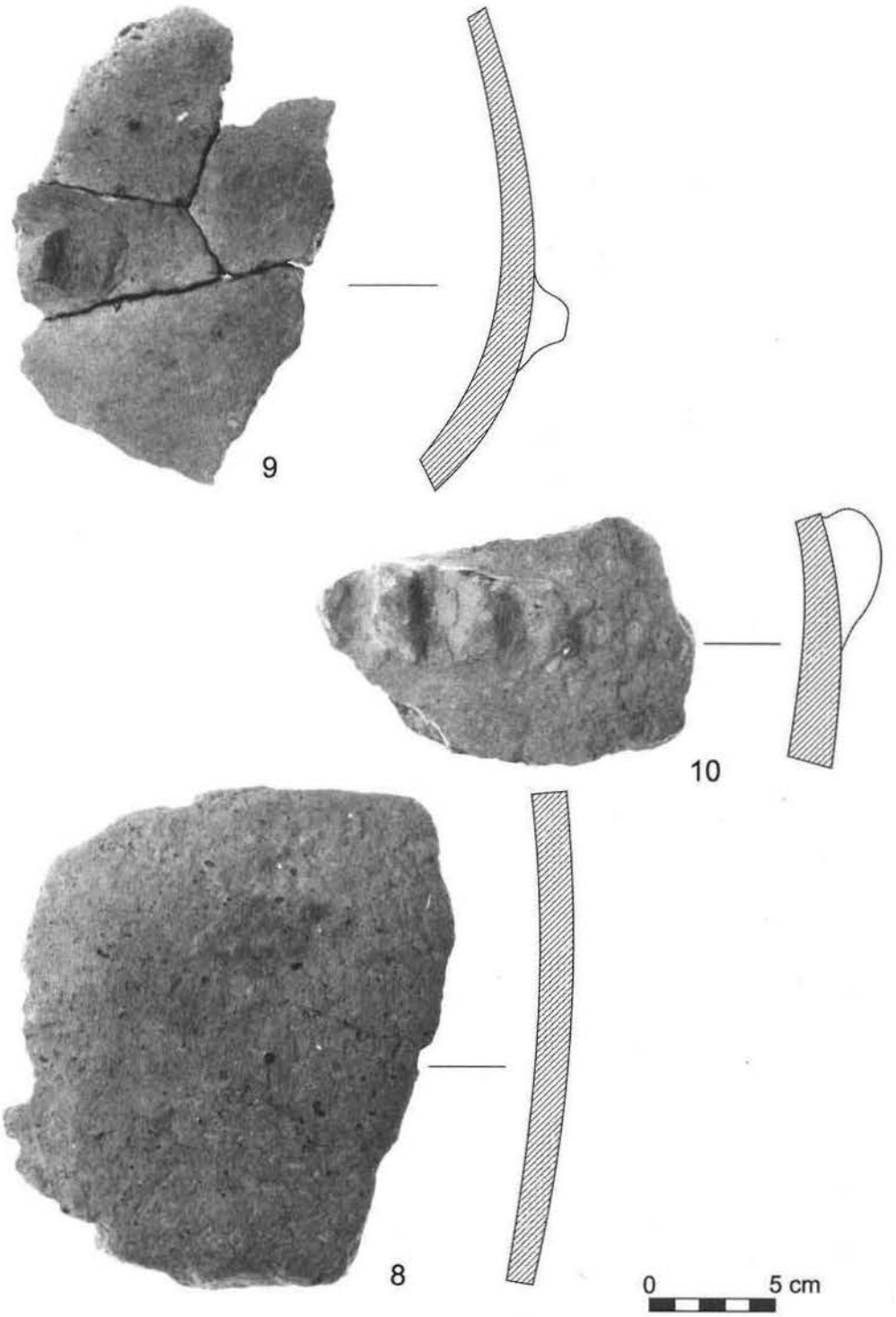


Fig. 69. Finds from Feature 16

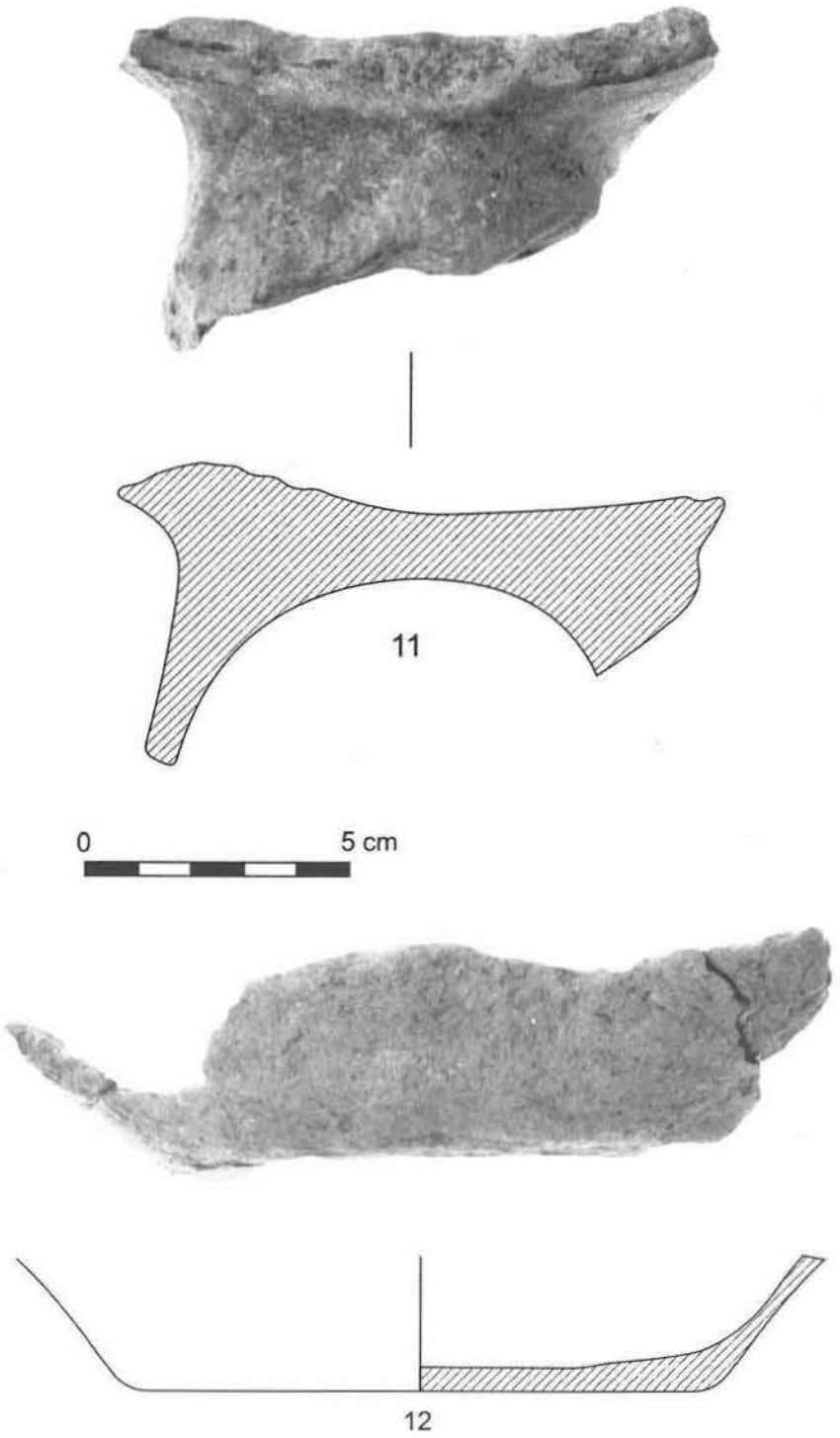
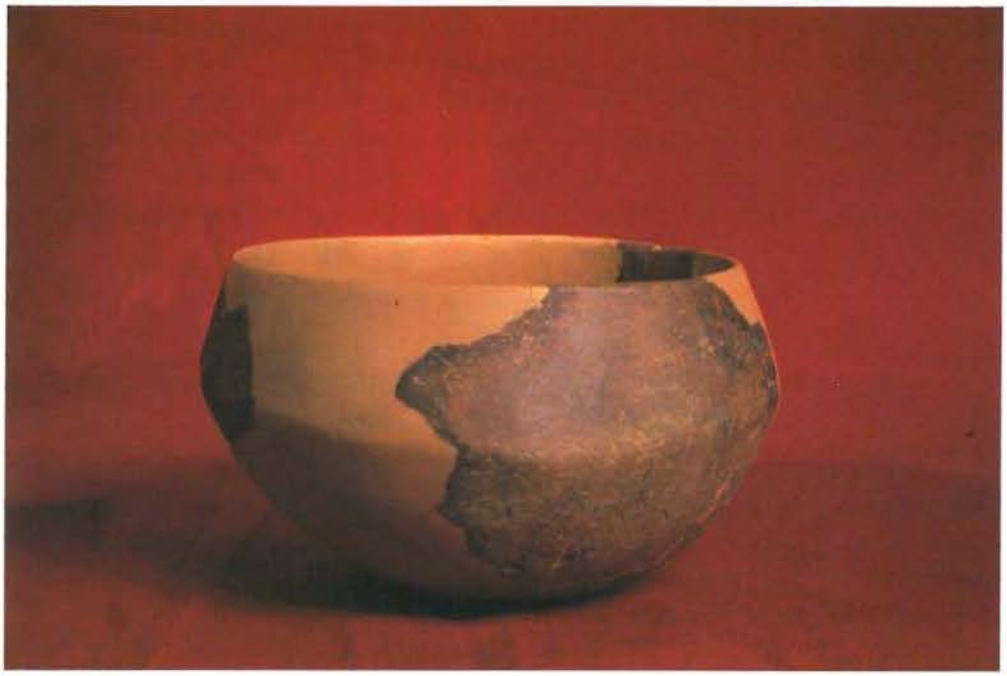


Fig. 70. Finds from Feature 16



14

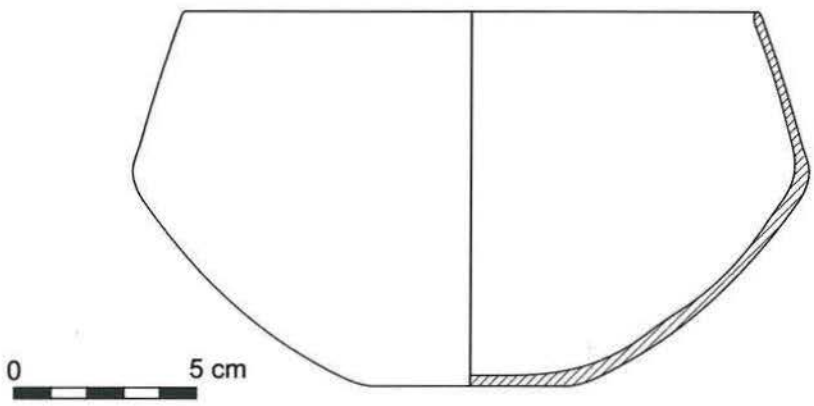


Fig. 71. Bowl from Feature 16

TRENCH II *(Fig. 72)*

Feature 13 *(Figs 73–74)*

The first excavated settlement feature of Trench II was a longish, northeast-east oriented pit. A debris layer with burnt daub fragments lay under the 20–25 cm thick humus. It was thickest in the southwestern part of the pit. Underlying this burnt debris layer we found the greyish, granular, hard-packed culture layer with organic material and finds observed in the other features. The fill under this layer was practically devoid of finds down to the floor of the pit. This would imply that the pit was filled up to that level immediately or very shortly after it had been dug. The longish pit was stepped on almost all sides, only at the narrow, eastern end did the 'steps' disappear along a roughly 20 cm long section. The 'step' was 70 cm deep on the average, the deepest point of the pit (103 cm) lay in its the central part.

Finds[19] *(Figs 75-80)*

A total of 968 pottery fragments, some chipped stone implements, 1 grinding stone and burnt daub fragments with twig impressions (2.4 kg, including the smaller burnt daub fragments) were recovered from this feature.

1. Rim fragment. Cream exterior, dark grey interior, tempered with chaff and sand, from a storage jar with slightly curved shoulder. A 2.4–2.7 cm wide band under the rim is black-topped, the rim is decorated with finger impressions. Rim diam.: 45 cm, wall th.: 1.5–1.6 cm.
2. Rim fragment. Light red, tempered with chaff and sand, "sandwich" core, from a pot with inturned rim and a polished surface. Rim diam.: 12 cm, wall th.: 0.3–0.7 cm
3. Rim fragment. Red, tempered with chaff and sand, from a smaller, thick-walled storage jar with slightly outturned rim and rough surface. Rim diam.: 12 cm, wall th.: 0.4–0.5 cm.
4. Rim fragment. Reddish-brown exterior, black interior, tempered with chaff and sand from a thick-walled bowl or storage jar with rough surface. Wall th.: 0.8–1.1 cm.
5. Rim fragment. Dark red, tempered with sand, from a chalice shaped bowl with slightly outturned rim and a polished surface. Rim diam.: 29 cm, wall th.: 0.5 cm.
6. Rim fragment. Dark red, tempered with chaff and sand, "sandwich" core, from a fine bowl with slightly inturned rim, covered with a polished, dark red slip both on its exterior and interior. Rim diam.: 27 cm, wall th.: 0.5–1.0 cm.
7. Rim fragment. Cream exterior, red interior, tempered with chaff and sand, from a small bowl with slightly inturned rim. Rim diam.: 22 cm, wall th.: 0.3–0.5 cm.
8. Rim fragment. Reddish-brown, tempered with chaff and sand, from a large, thick-walled, hemispherical bowl decorated with eight round, finger impressed knobs under the rim. Rim diam.: 29 cm, wall th.: 1.6 cm.
9. Body fragment. Light red, tempered with chaff and sand, "sandwich" core, from the shoulder of a storage jar. Wall th.: 0.6 cm.
10. Bright red, tempered with chaff and sand, "sandwich" core, from a large, thin-walled storage jar with a handle. Belly diam.: 32 cm, wall th.: 0.5–0.6 cm.
11. Body fragment. Bright red, tempered with chaff and sand, "sandwich" core, from a storage jar with outturned rim and horizontally set handle. Wall th.: 0.5 cm.
12. Body fragment. Bright red, tempered with chaff and sand, "sandwich" core, from the shoulder of a larger vessel. Wall th.: 0.7–0.9 cm.
13. Body fragment. Bright red, tempered with chaff and sand, "sandwich" core, from the shoulder of a larger storage jar. Wall th.: 0.6–0.7 cm.

[19] Inv. no. 93.114.1–55.

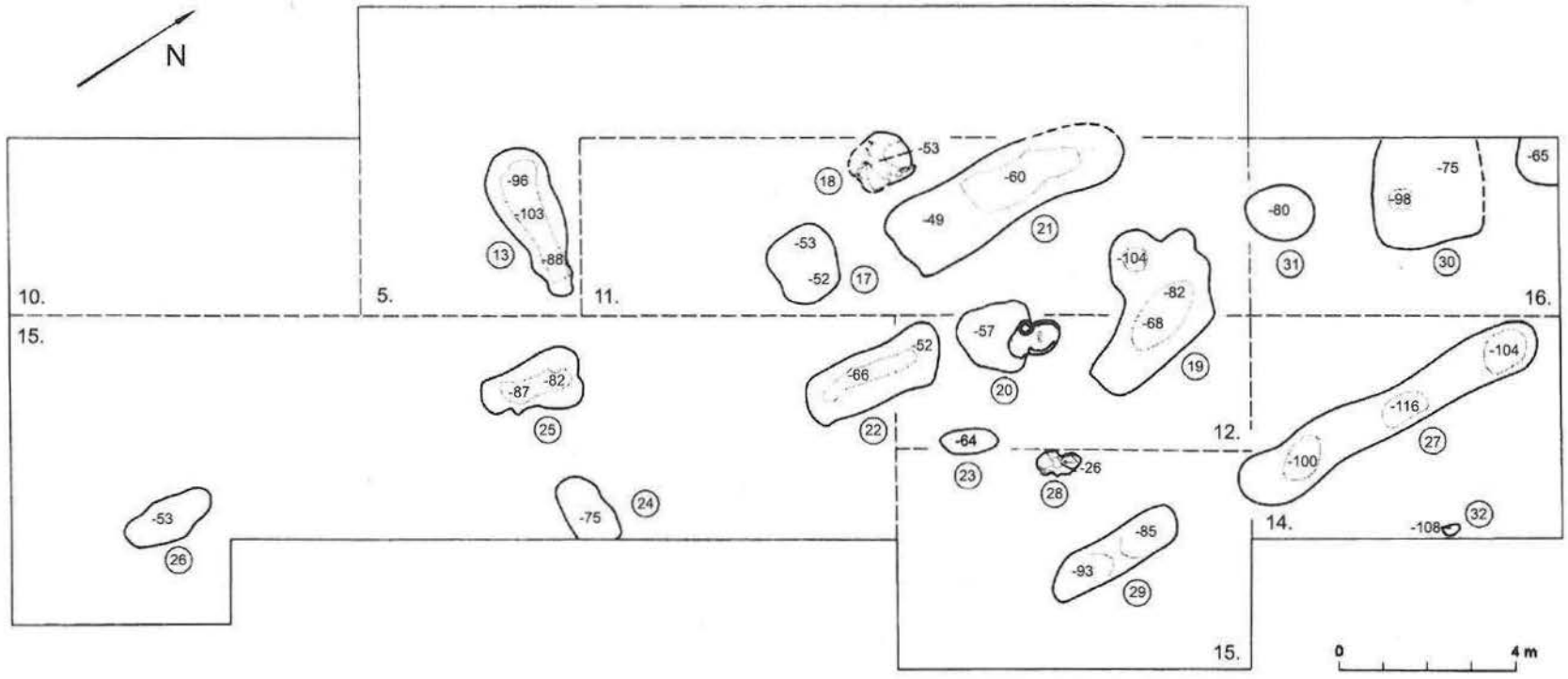


Fig. 72. Features of Trench II

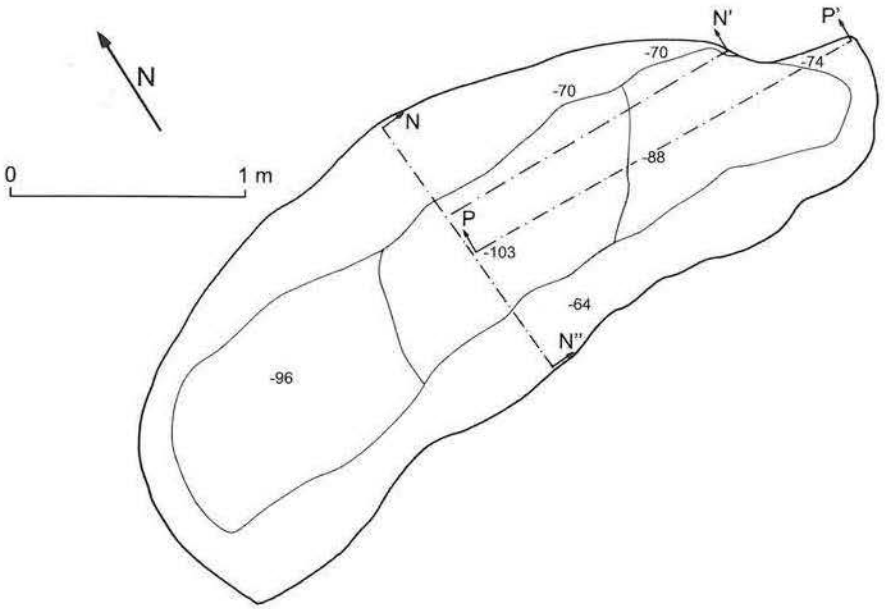


Fig. 73. Feature 13

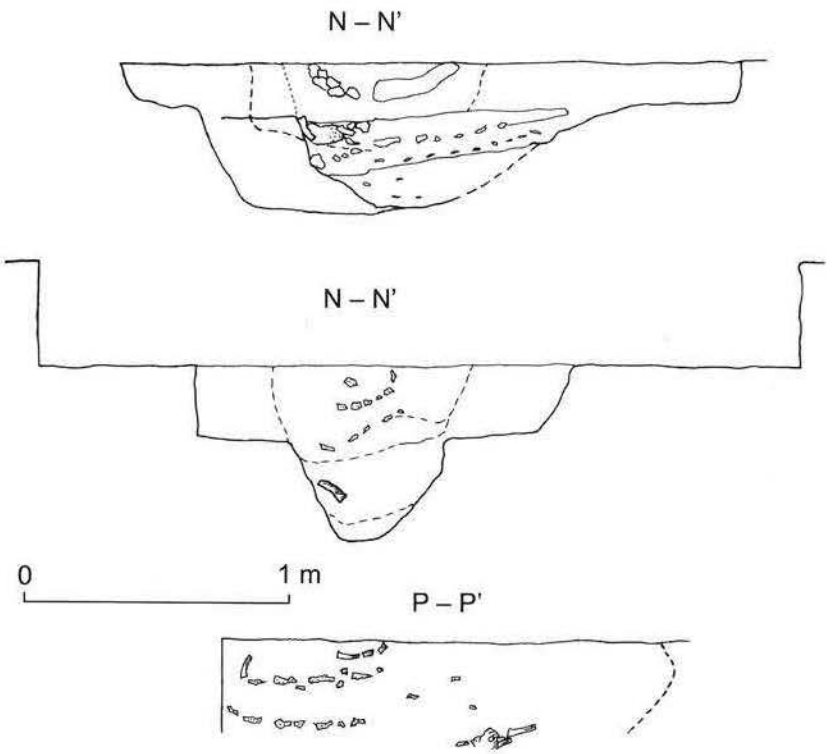


Fig. 74. Feature 13 (sections)

14. Body fragment. Yellowish-red, tempered with chaff, from a smaller storage jar with a horizontally set handle. Belly diam.: 23 cm, wall th.: 0.4–0.7 cm.
15. Body fragment. Light red, tempered with chaff and sand, from a thick-walled, hemispherical vessel decorated with a flat, finger impressed knob. Wall th.: 1.0 cm.
16. Lug. Light reddish-grey pointed lug, from a larger vessel, tempered with chaff and sand.
17. Handle. Red and dark grey, tempered with chaff and sand, vertically set, from a poorly fired, smaller pot.
18. Body fragment. Reddish-brown, tempered with chaff and sand, from a well-fired, biconical bowl with rounded carination, made from finely levigated clay and covered with a polished, dark red slip both on its exterior and interior. Wall th.: 0.4–0.6 cm.
19. Body fragment. Red, tempered with sand, from a well-fired, hemispherical vessel made from poorly levigated clay and covered with a polished, dark red slip both on its exterior and interior. Wall th.: 0.4–0.6 cm.
20. Body fragment. Red, tempered with sand, "sandwich" core, from a well-fired vessel made from finely levigated clay and covered with a polished, dark red slip on its exterior. Wall th.: 0.6 cm.
21. Body fragment. Light red, tempered with sand, from the belly of a well-fired, biconical vessel, made from finely levigated clay and polished both on its exterior and interior. Wall th.: 0.7 cm.
22. Body fragment. Reddish-brown, tempered with sand, "sandwich" core, from a poorly fired vessel made from poorly levigated clay and polished on both sides, decorated with a three parallel smoothed-in lines on its exterior surface.
23. Body fragment. Red and grey, tempered with chaff and sand, from a thick-walled storage jar, decorated with Schlickwurf on the rough surface. Wall th.: 1.0–1.2 cm.
24. Handle. Light red, rough surface, from a cylindrical vessel handle tempered with chaff and sand.

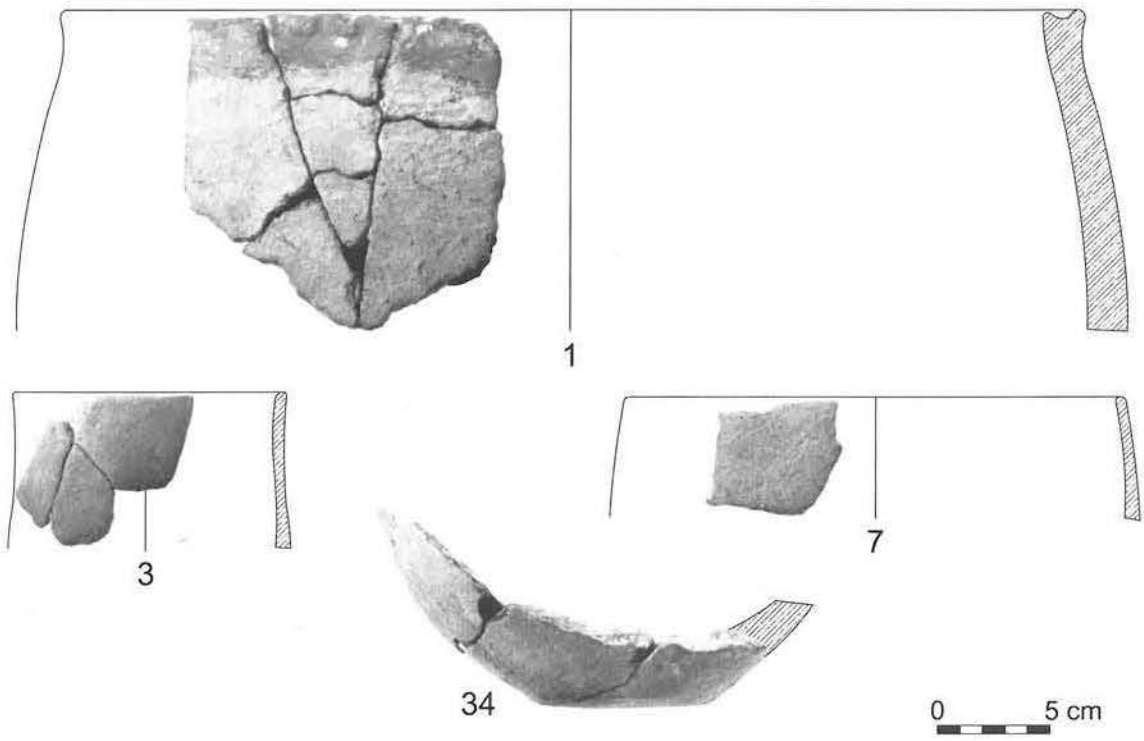


Fig. 75. Finds from Feature 13

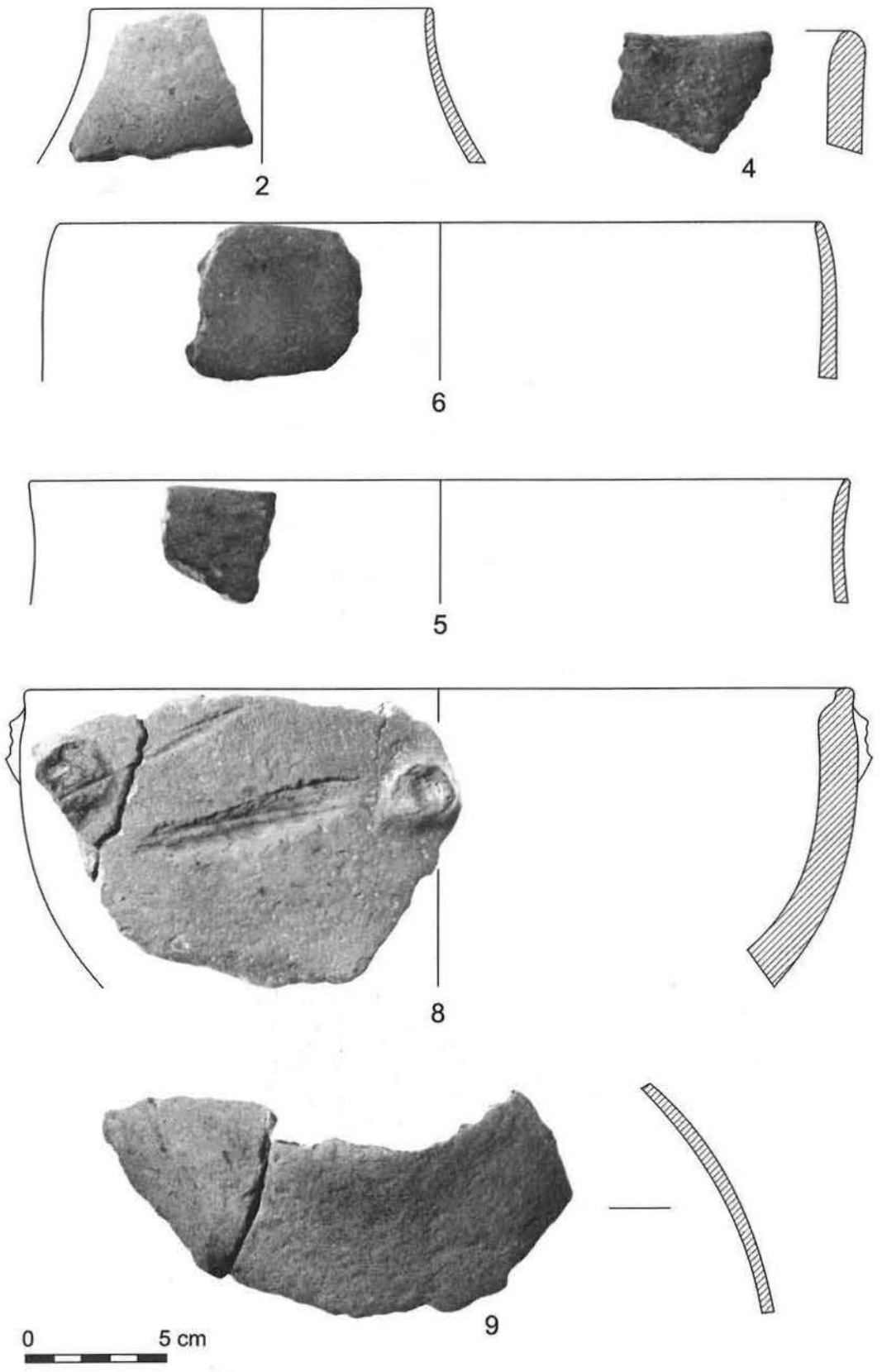


Fig. 76. Finds from Feature 13

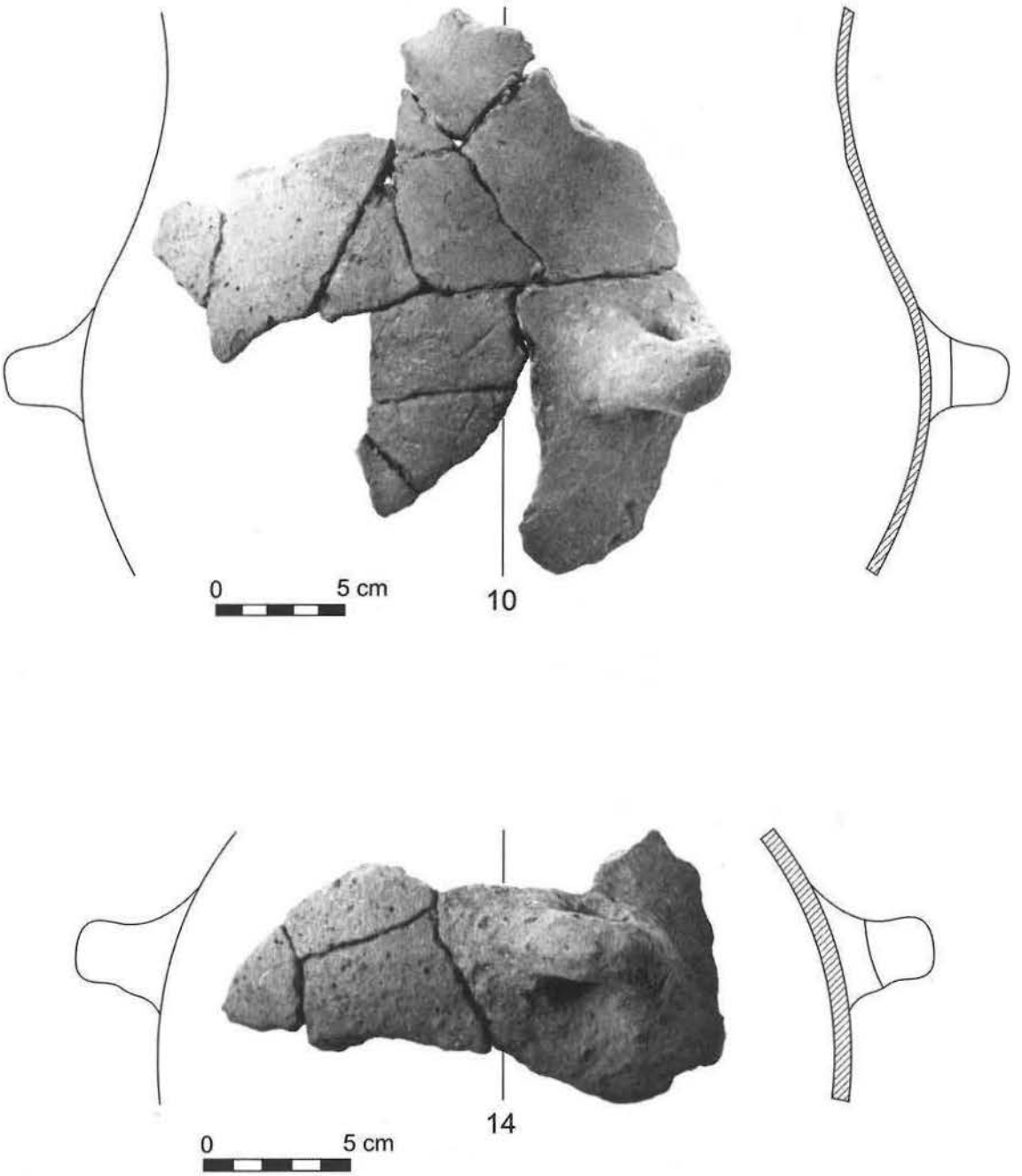


Fig. 77. Finds from Feature 13

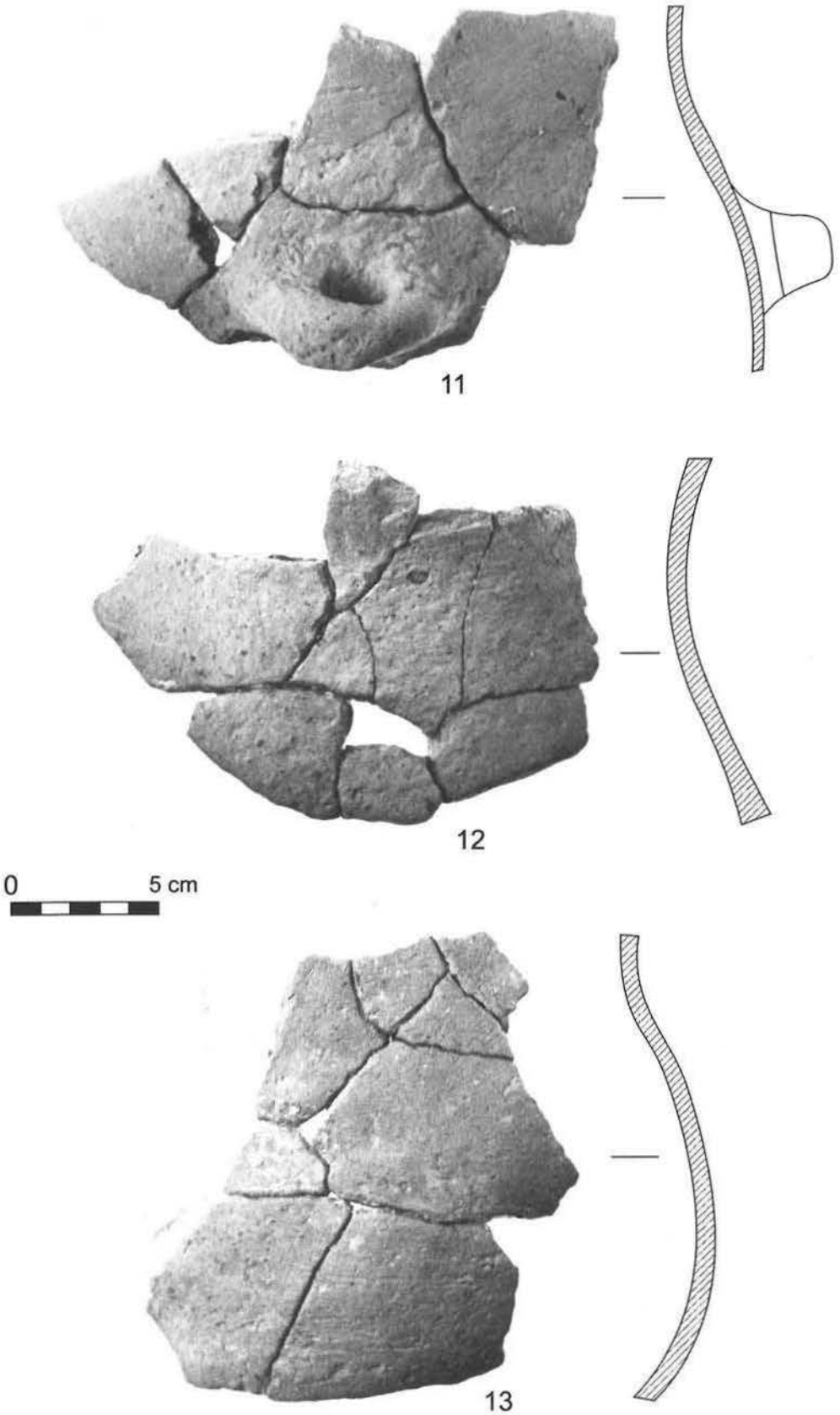


Fig. 78. Finds from Feature 13

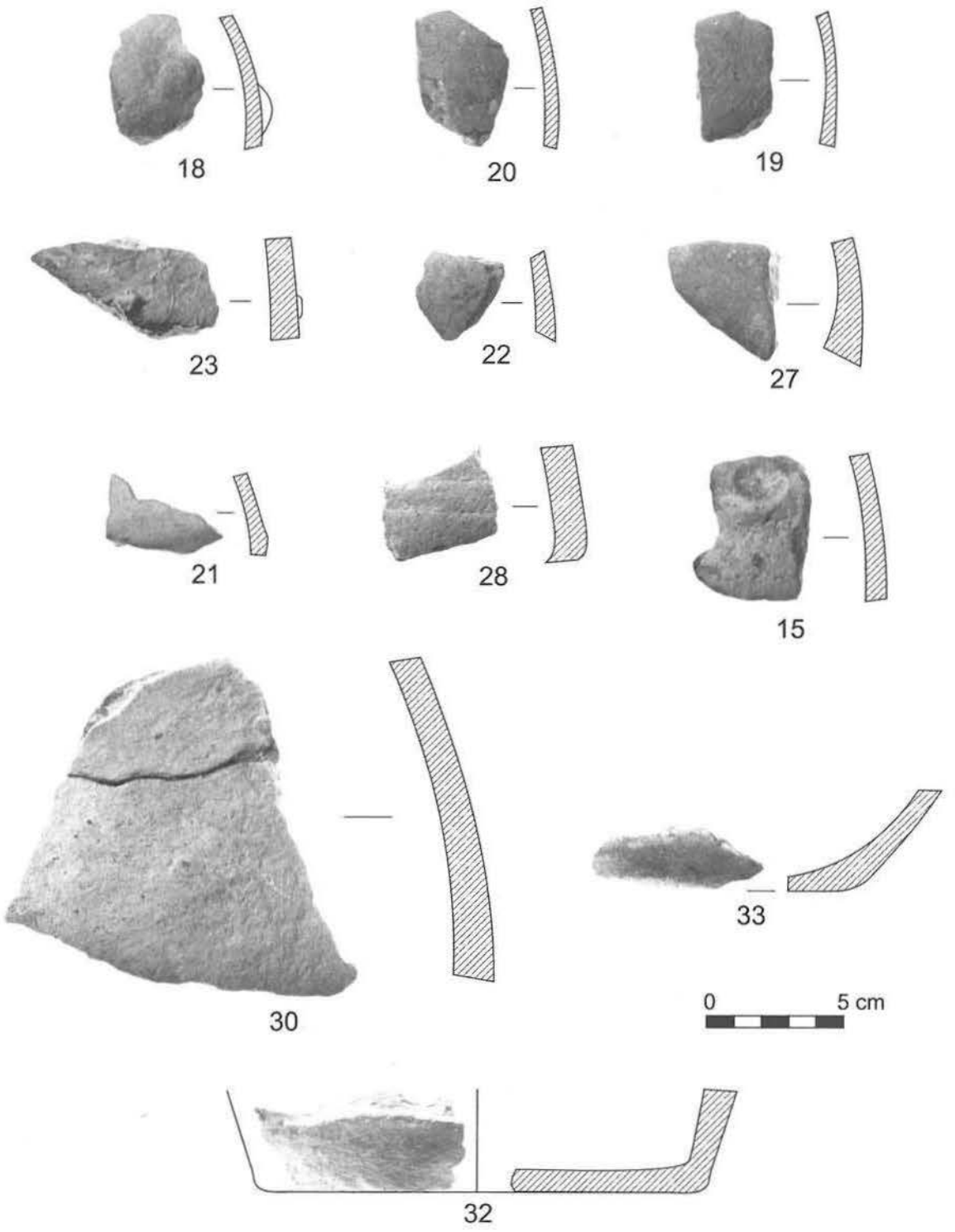


Fig. 79. Finds from Feature 13

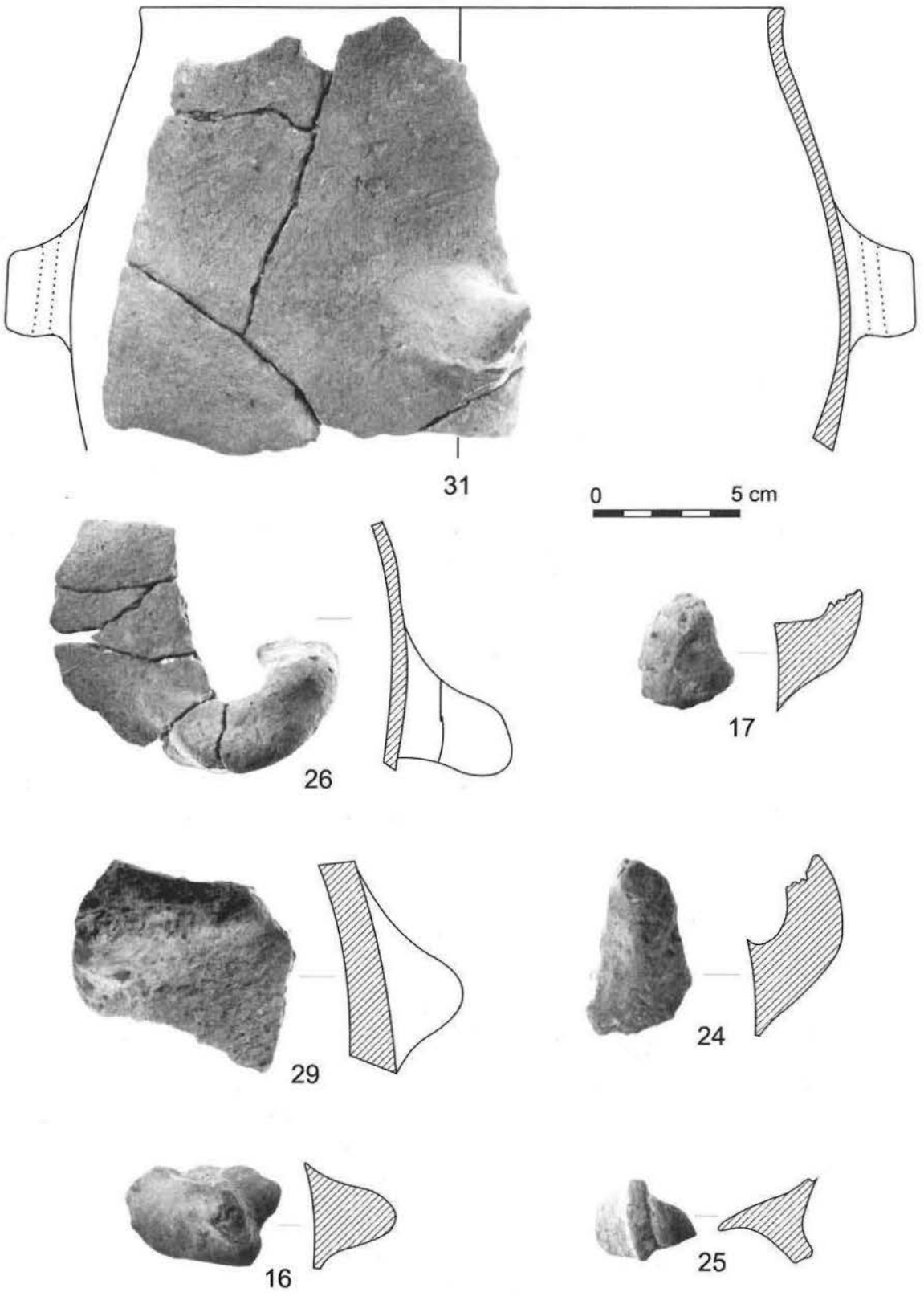


Fig. 80. Finds from Feature 13

25. Fragment of a pedestalled vessel. Greyish-yellow, tempered with chaff and sand, from a very low pedestal or foot-ring.
26. Body fragment. Light red, tempered with chaff and sand, "sandwich" core, from a storage jar with horizontally set handle. Wall th.: 0.5–0.6 cm.
27. Body fragment. Red, tempered with sand, "sandwich" core, from a well-fired, hemispherical vessel made from finely levigated clay and covered with a polished, dark red slip both on its exterior and interior. It was perhaps part of a pedestalled vessel. Wall th.: 0.8–1.2 cm.
28. Body fragment. Light red, tempered with chaff and sand, from the belly of a thick-walled storage jar made from poorly levigated clay with a rough surface, decorated with two deeply incised lines. Wall th.: 1.1 cm.
29. Body fragment. Light red, tempered with chaff, "sandwich" core, from a poorly fired, thick-walled storage jar with rough surface made from poorly levigated clay, decorated with a round knob and a finger impressed rib on the belly. Wall th.: 1.2–1.3 cm.
30. Body fragment. Light red, tempered with chaff and sand, "sandwich" core, from a large storage jar made from poorly levigated clay. Wall th.: 1.1–1.2 cm.
31. Rim and body fragment. Bright red, tempered with chaff and sand, "sandwich" core, from a poorly fired storage jar with slightly outturned rim made from finely levigated clay, with the fragment of a horizontally set handle. Rim diam.: 22 cm.
32. Base fragment. Light red, tempered with chaff and sand, from a larger vessel polished both on its exterior and interior. Base diam.: 15 cm, wall th.: 1.3 cm.
33. Base fragment. Red and dark grey, tempered with chaff and sand, from a well-fired, small bowl made from finely levigated clay and polished both on its exterior and interior. Base diam.: 7 cm, wall th.: 0.5–0.6 cm.
34. Base fragment. Reddish-grey exterior, bright red interior, from a large, thick-walled pot. Base diam.: 8.7 cm, wall th.: 1.4–1.9 cm.

Feature 17 *(Fig. 81)*

Round, shallow pit. Its deepest point lay at a depth of only 53 cm. The small, deep holes in its upper part perhaps held the feet of a stand or a bench. The rather uniform fill contained much charcoal, many stone implements and a conspicuously high number of 1–2 mm large flint chips, suggesting that the pit can probably be interpreted as a work pit or a workshop.

Finds[20] *(Figs 82–85)*

A total of 594 pottery fragments, some chipped stone implements and c. 200 stone chips were recovered from this feature.

1. Rim and body fragment. Reddish-brown, tempered with chaff and sand, from a well-fired, biconical bowl with a slightly incurving upper part, made from finely levigated clay and polished both on its exterior and interior. Rim diam.: 28.5 cm, wall th.: 0.7–1.2 cm.
2. Body fragment. Reddish-brown, tempered with chaff and sand, from a biconical vessel with rounded lower part and incurving upper part, made from finely levigated clay and polished both on its exterior and interior. The carination is decorated with two curved lines. Wall th.: 0.6–1.1 cm.
3. Body fragment. Red, tempered with chaff and sand, from the belly of a well-fired, globular vessel made from finely levigated clay and covered with a polished, dark red slip both on its exterior and interior. Wall th.: 0.8–1.0 cm.
4. Body fragment. Light yellowish-red, tempered with chaff and sand, "sandwich" core, from the belly of a chalice shaped vessel (probably the upper part of a pedestalled vessel) made from finely levigated clay and polished both on its exterior and interior. Wall th.: 0.7–1.2 cm.

[20] Inv. no. 2000.88.1–13.

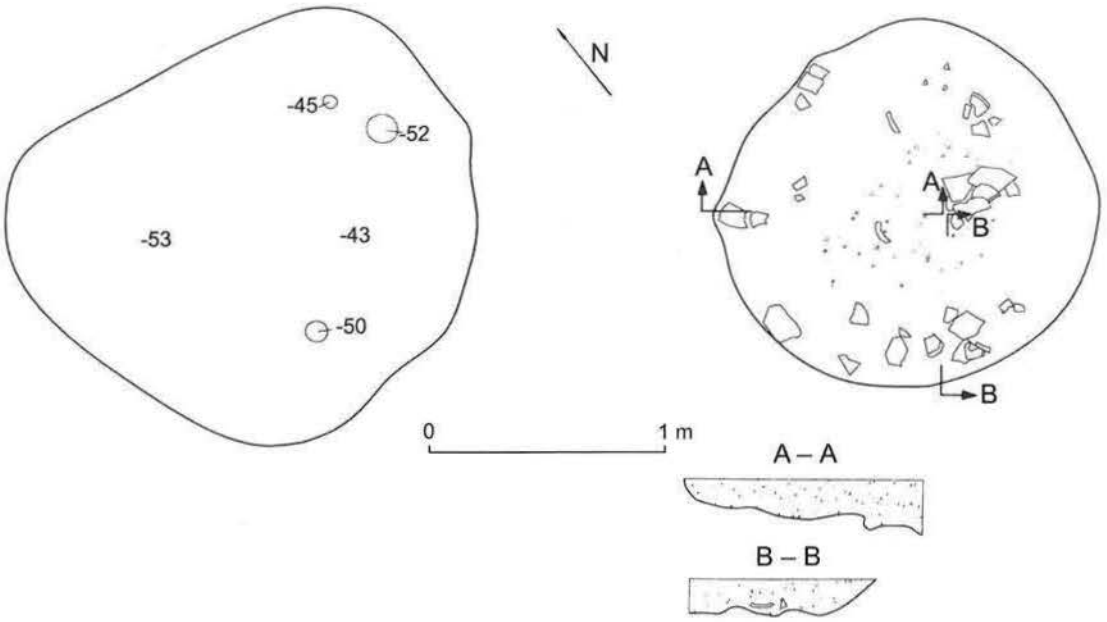


Fig. 81. Feature 17

5. Fragment of a pedestalled vessel. Dark red, tempered with chaff and sand, from the well-fired, thick-walled, low, conical pedestal of a small pedestalled vessel made from poorly levigated clay. Base diam.: 6.0 cm.
6. Body fragment. Yellowish-red, tempered with chaff and sand, from the shoulder of a well-fired, large storage jar made from poorly levigated clay, decorated with a finger impressed rib on the shoulder and a spiral meander pattern. The vessel was originally covered with a dark red slip. Average wall th.: 1.3 cm.
7. Base fragment. Red, tempered with chaff and sand, "sandwich" core, from a poorly fired vessel made from poorly levigated clay and covered with a dark red slip. Base diam.: 8.5 cm, Wall th.: 0.7–1.3 cm.
8. Base fragment. Light red, tempered with chaff and sand, from a well-fired, larger vessel made from poorly levigated clay. Base diam.: 11 cm, wall th.: 0.6–1.1 cm.
9. Base fragment. Yellowish-red exterior, greyish-red interior, tempered with chaff and sand, from a poorly fired, porous vessel made from poorly levigated clay. Base diam.: 5.5 cm, wall th.: 0.5–1.4 cm.
10. Base fragment. Light red, tempered with chaff and sand, from a poorly fired, larger vessel made from poorly levigated clay, decorated with a simple and a tripartite knob above the base. Base diam.: 21 cm, wall th.: 0.7–1.8 cm.
11. Spindle whorl. Yellowish exterior, yellowish-grey mottled interior, from a poorly fired, worn, smaller globular vessel with porous fabric made from poorly levigated clay, perforated secondarily. The edges were not ground; the fragment is roughly disc shaped.
12. Body fragment. Dark red, tempered with chaff and sand, "sandwich" core, from the globular belly of a poorly fired, large storage jar made from poorly levigated clay and decorated with finger-drawn barbotine. Belly diam.: 34 cm, wall th.: 1.2 cm.
13. Body fragment. Light yellowish-grey, tempered with chaff and sand, "sandwich" core, from the globular belly of a poorly fired, large storage jar made from poorly levigated clay. Wall th.: 0.5–1 cm.
14. Rim and body fragment. Red, tempered with chaff and sand, "sandwich" core, from a poorly fired, large storage jar with outturned rim made from poorly levigated clay and covered with a polished, dark red slip both on its exterior and interior. It is decorated with three lightly incised, vertical, wide lines under the rim. Rim diam.: 26 cm, reconstructed h.: c. 60 cm.

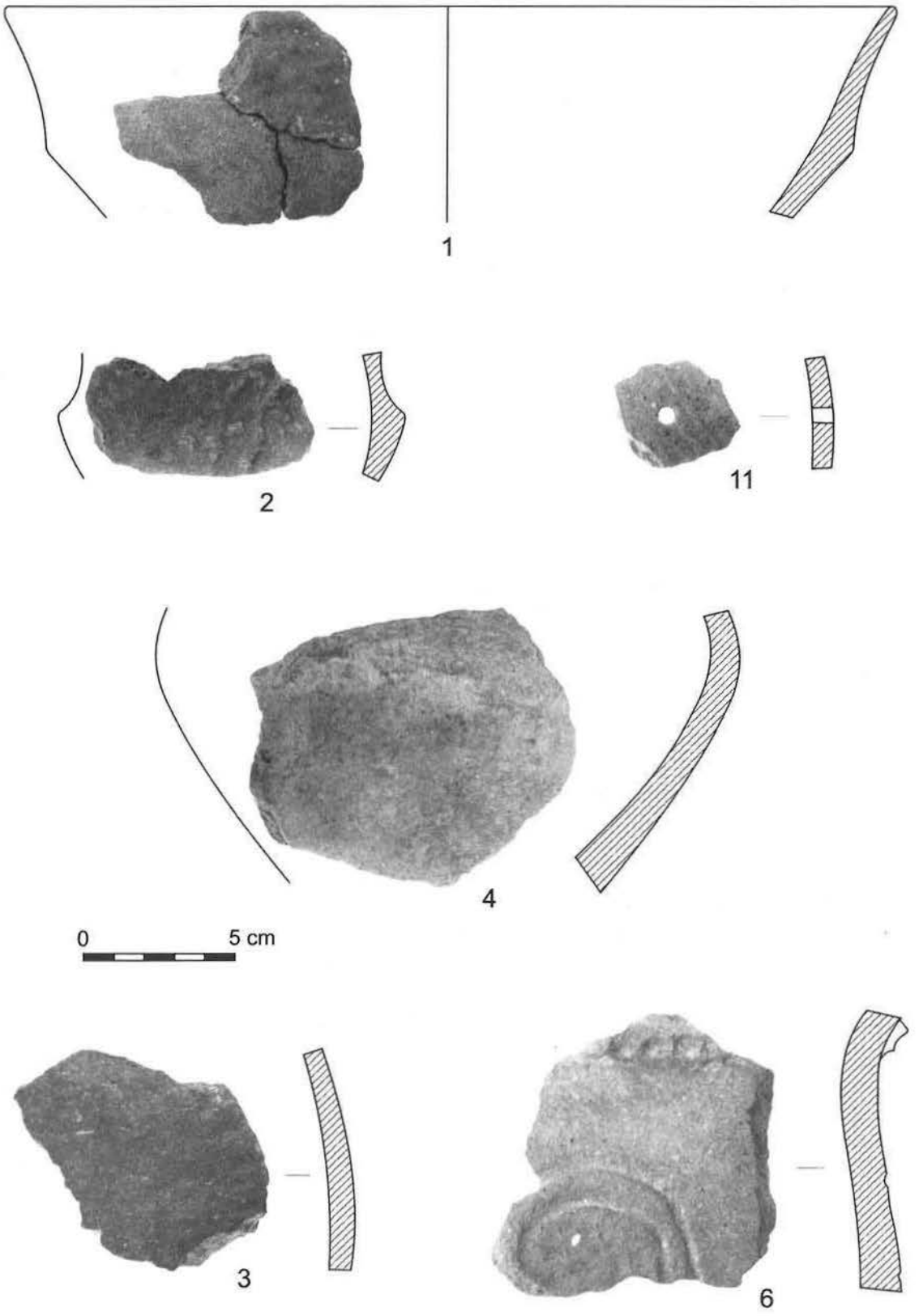


Fig. 82. Finds from Feature 17

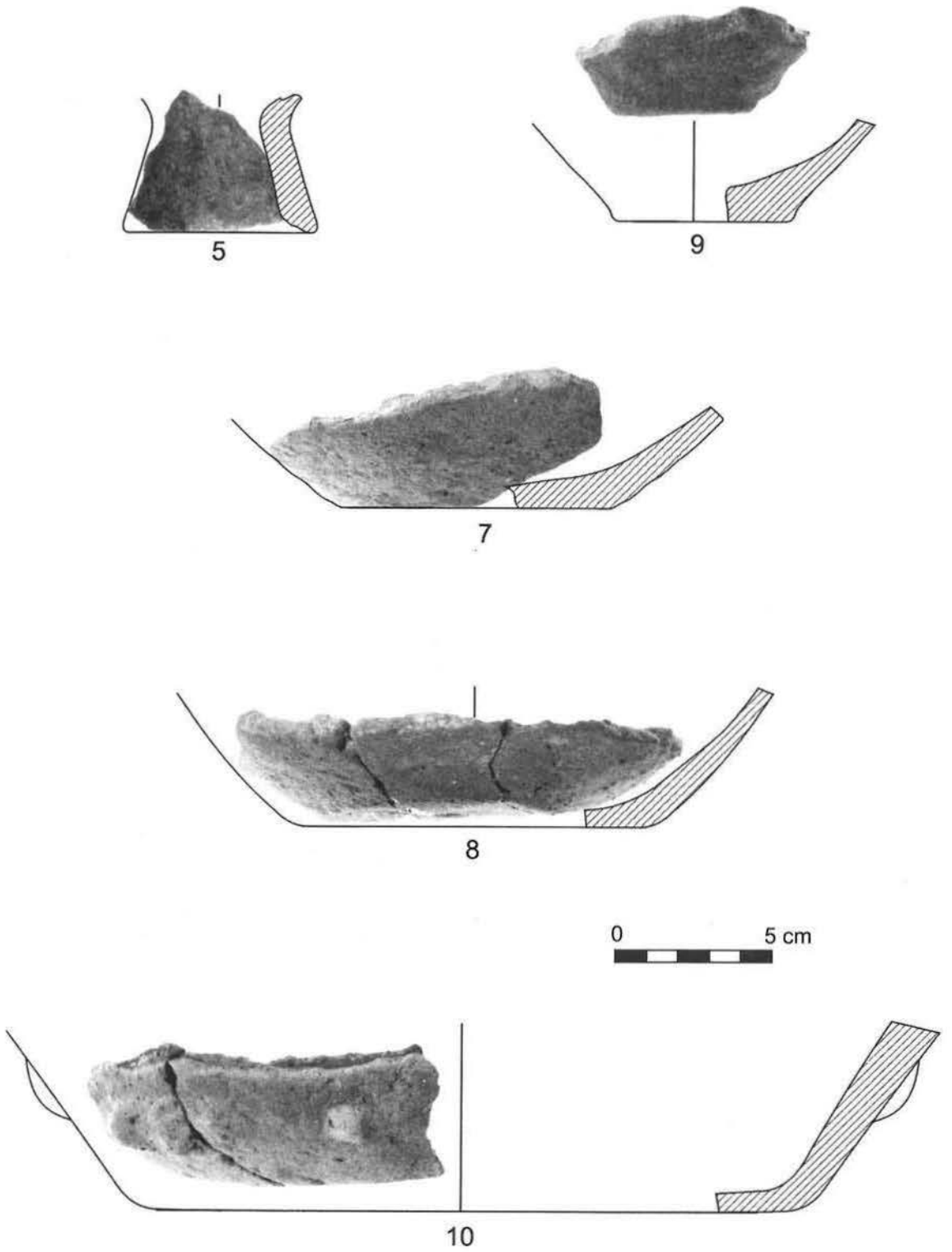
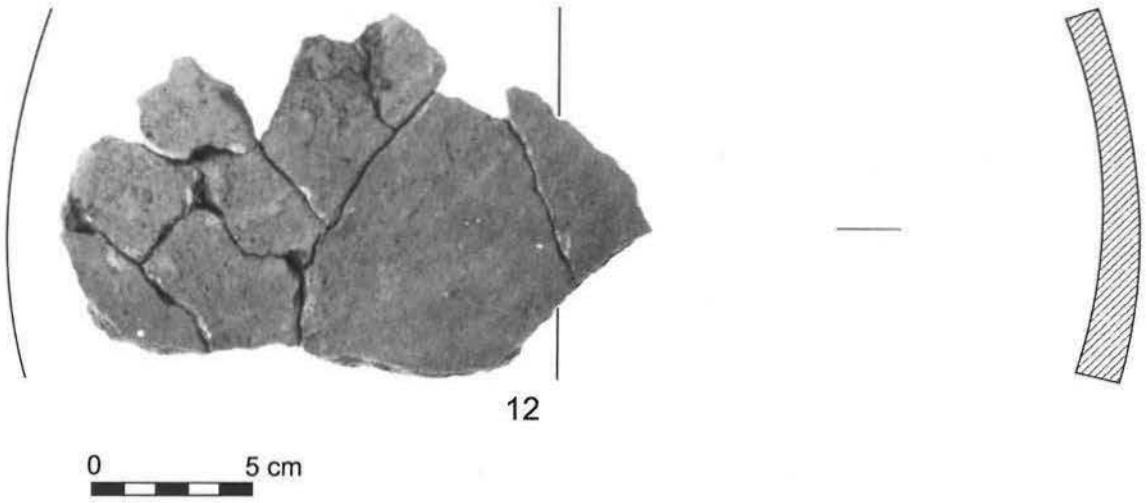


Fig. 83. Finds from Feature 17



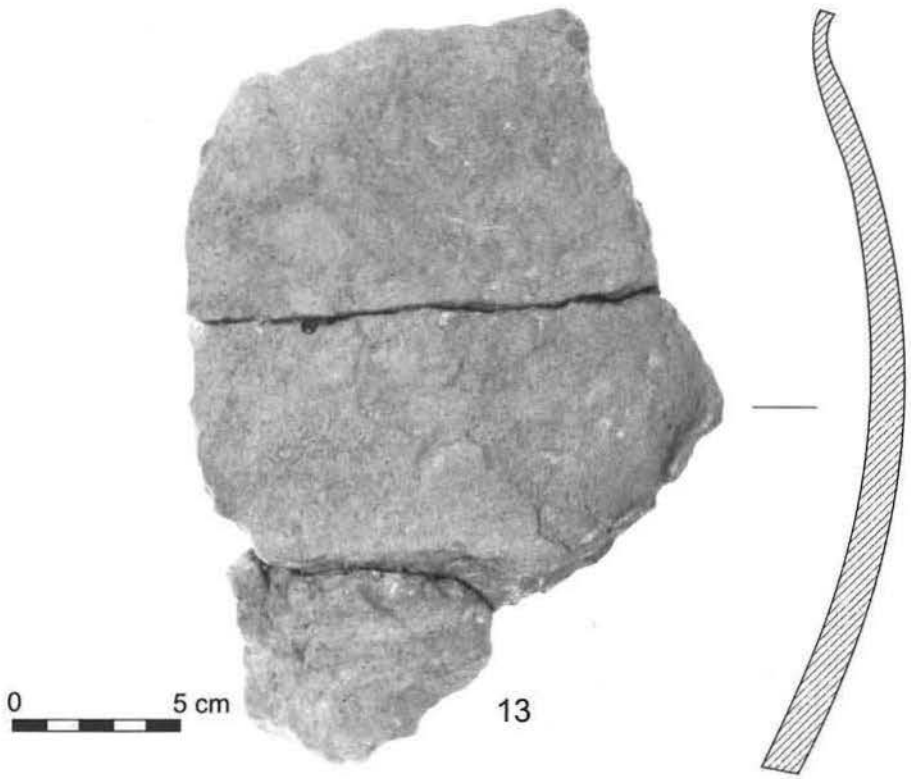


Fig. 84. Finds from Feature 17

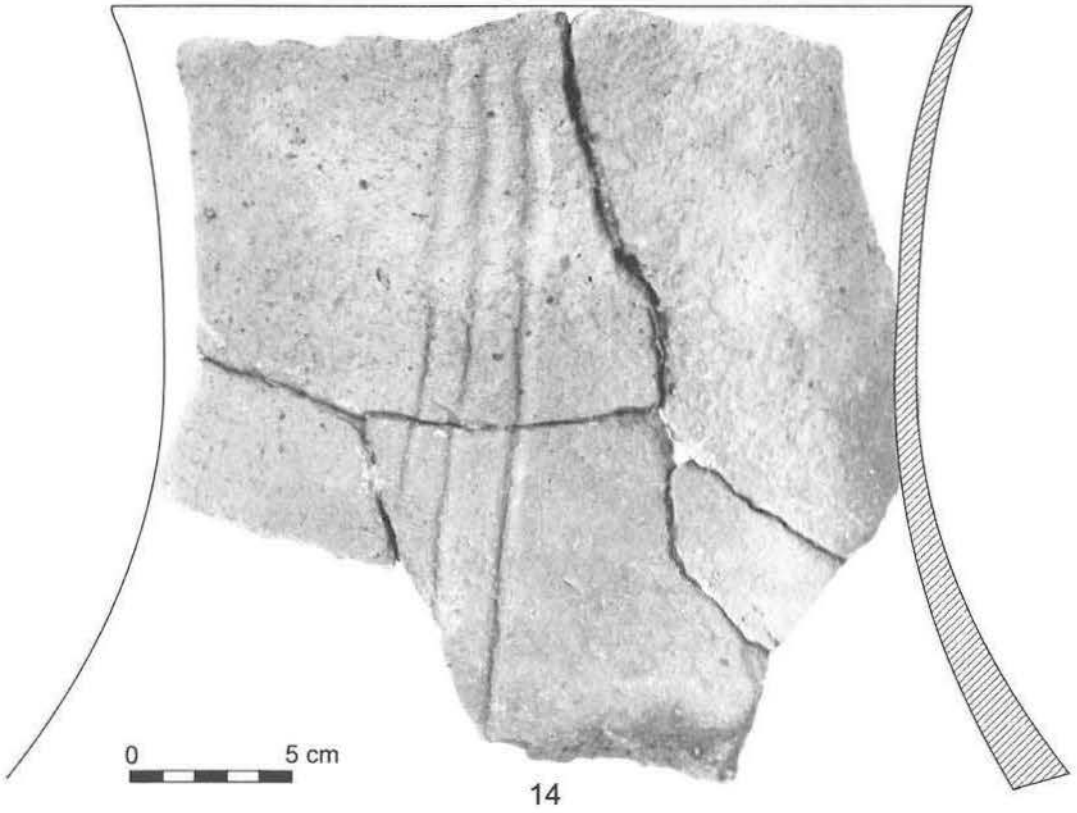


Fig. 85. Vessel fragment from Feature 17

Feature 18 *(Fig. 86)*

A north oriented, strongly burnt, small pit. One side was strongly burnt with a more a less circular baking plate, the other had an ashy fill that was also strongly burnt. This feature can be interpreted as a fireplace.

Finds[21] *(Fig. 87)*

A total of 217 pottery fragments, some chipped stone implements and 1 grinding stone were recovered from this feature.

1. Rim and body fragment. Red, tempered with chaff and sand, from a poorly fired, biconical bowl with light carination made from finely levigated clay and covered with a polished, dark red slip both on its exterior and interior. Rim diam.: 26 cm, wall th.: 0.6–0.9 cm.
2. Rim fragment. Dark red exterior, light red interior, tempered with chaff and sand, from a well-fired, hemispherical bowl made from finely levigated clay and polished both on its exterior and interior. Rim diam.: 27 cm, wall th.: 0.4–0.7 cm.
3. Rim fragment. Red, tempered with chaff and sand, "sandwich" core, from a small, poorly fired, hemispherical with downward thickening wall made from poorly levigated clay. Rim diam.: 13 cm, wall th.: 0.6–1.7 cm.
4. Rim fragment. Red, tempered with chaff and sand, from well-fired, possibly biconical bowl with a incurving upper part made from finely levigated clay and covered with a polished, dark red slip both on its exterior and interior. Rim diam.: 31 cm, average wall th.: 0.7 cm.

[21] Inv. no. 2000.89.1–10.

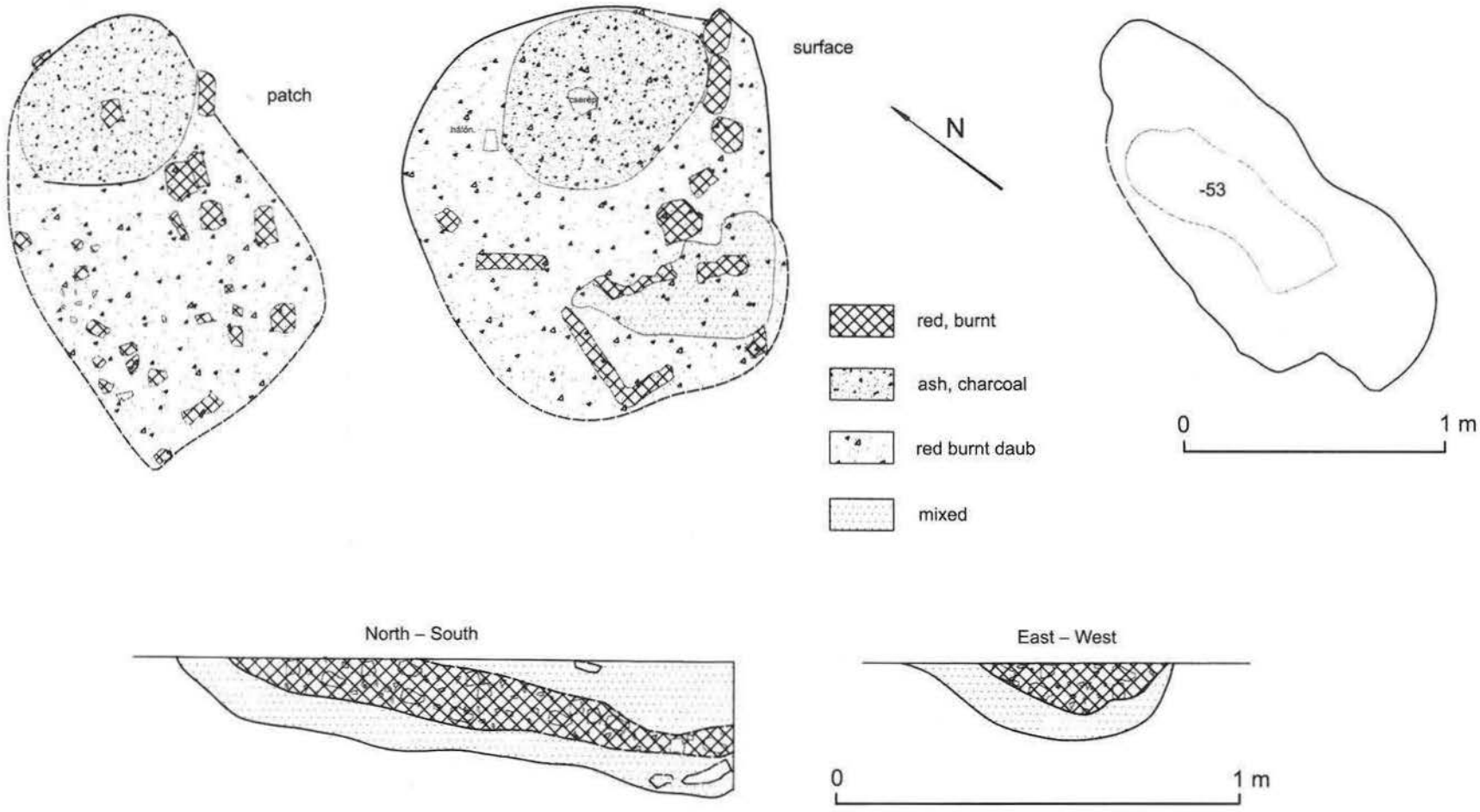


Fig. 86. Feature 18

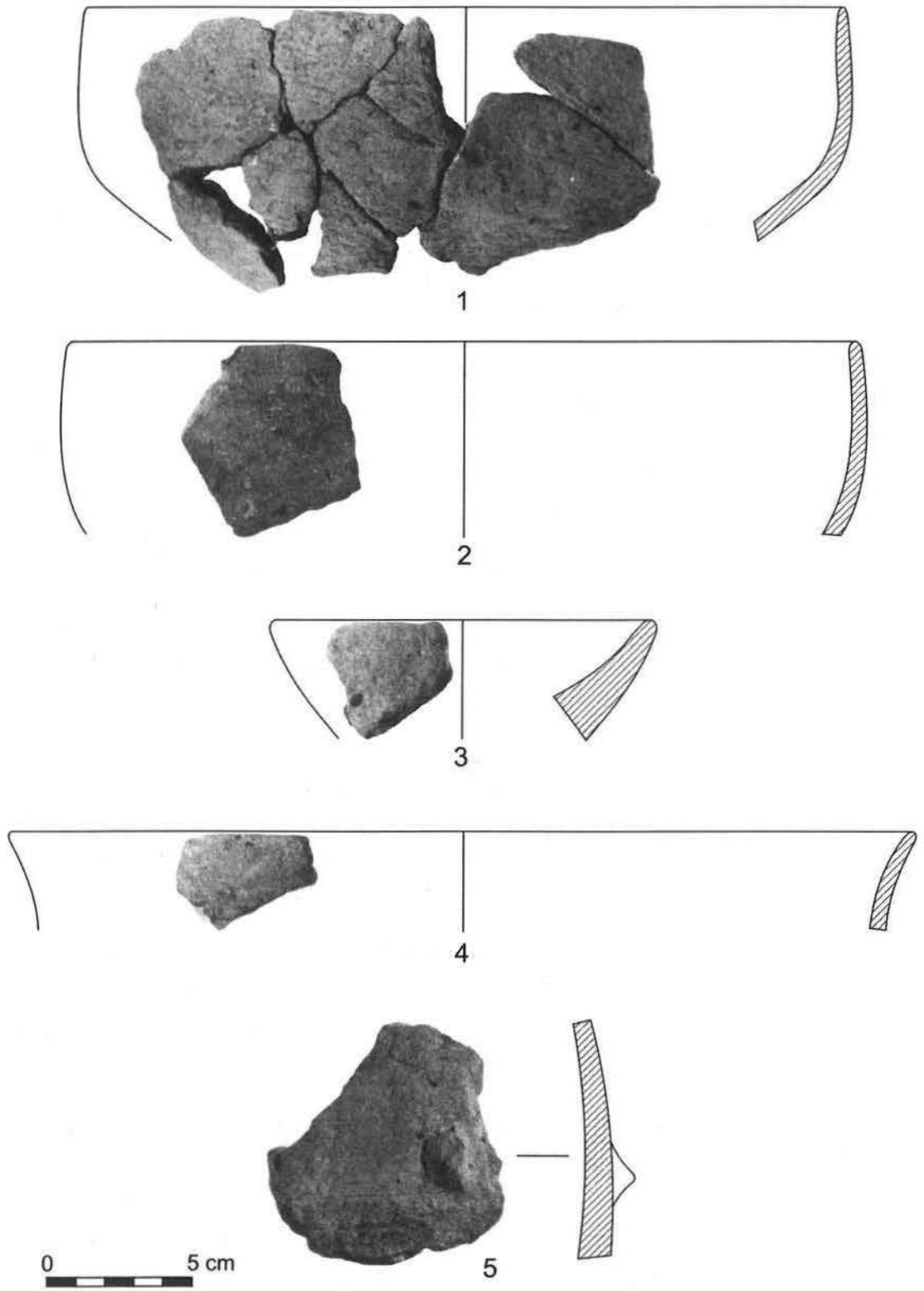


Fig. 87. Finds from Feature 18

5. Body fragment. Dark red, tempered with chaff and sand, from a poorly fired, globular storage jar made from poorly levigated clay and decorated with a small pointed knob. Wall th.: 0.6–1.0 cm.

Feature 19 *(Fig. 88)*

North oriented, longish pit with two separate depressions in it and another round depression adjoining it in its southwestern part. The wall of the latter could not be distinguished either during clearing, or in the sections made of the pit, this being the reason that we regarded it as part of the same pit and did not give it a separate feature number. The upper part was covered with large daub fragments burnt to a red colour. Underneath the daub fragments we found a greyish-white granular layer that was hard-packed in some spots. Countless finds lay scattered on this layer, interpreted as an occupation surface; as a matter of fact, this pit yielded one of the richest find assemblages from the site. The pit gradually sloped towards the depressions from the north oriented part and the same could be observed in the southeastern part. We cannot speak of well distinguishable postholes or smaller pits dug inside the larger pit, even though its form, its depth and its position inside the house would suggest that it had been dug for the post(s) supporting the roof. A number of finds were also recovered from the layer under the greyish, granular layer: a badly preserved, but intact conical pedestal was found at a depth of 80 cm. The deeper sections of the pit yielded an abundance of vessel fragments with traces of black paint. No such sherds were found in the upper 60–70 cm and it seems likely that the survival of this black paint can be attributed to the soil dampness. In many cases, the vessel wall 'cast off' the black paint that survived as an imprint in the soil under the sherd. In some cases, this painting survived in a well discernible form and even some sort of circular pattern could be made out on one of these sherds. We photographed these fragments *in situ*, before they dried out since this was the only means of documenting the black paint on these pottery fragments.

Finds[22] *(Figs 89–96)*

A total of 1204 pottery fragments, some chipped stone implements and 27 burnt daub fragments (5.5 kg) were recovered from this feature.

1. Rim fragment. Dark red, tempered with chaff and sand, from a well-fired bowl with slightly outturned rim made from finely levigated clay and polished both on its exterior and interior. Rim diam.: 34 cm, wall th.: 0.4–0.9 cm.
2. Rim fragment. Dark red, tempered with chaff and sand, from a well-fired, hemispherical bowl made from poorly levigated clay and polished both on its exterior and interior. Rim diam.: 29 cm, wall th.: 0.4–0.8 cm.
3. Rim fragment. Red, tempered with chaff, sand and pebbles, "sandwich" core, from a poorly fired, bomb shaped vessel with inturned rim made from poorly levigated clay. Rim diam.: 12 cm, average wall th.: 0.8 cm.
4. Body fragment. Red, tempered with chaff and sand, "sandwich" core, from a small biconical bowl with a incurving upper part, originally polished both on its exterior and interior. Rim diam.: 11 cm, wall th.: 0.3–1.0 cm.
5. Lug. Light red, porous, poorly fired, upward curving, pointed lug handle made from poorly levigated clay tempered with chaff and sand, originally fitted to the side of a smaller vessel.
6. Lug. Light red, porous, poorly fired, upward curving lug handle made from poorly levigated clay tempered with chaff and sand with a "sandwich" core, fitted to the body of a larger storage jar. Decorated with deep finger impressions beside and under the lug. The top is worn; judging from its thickness it cannot have been a vessel handle.

[22] Inv. no. 2000.90.1–71.

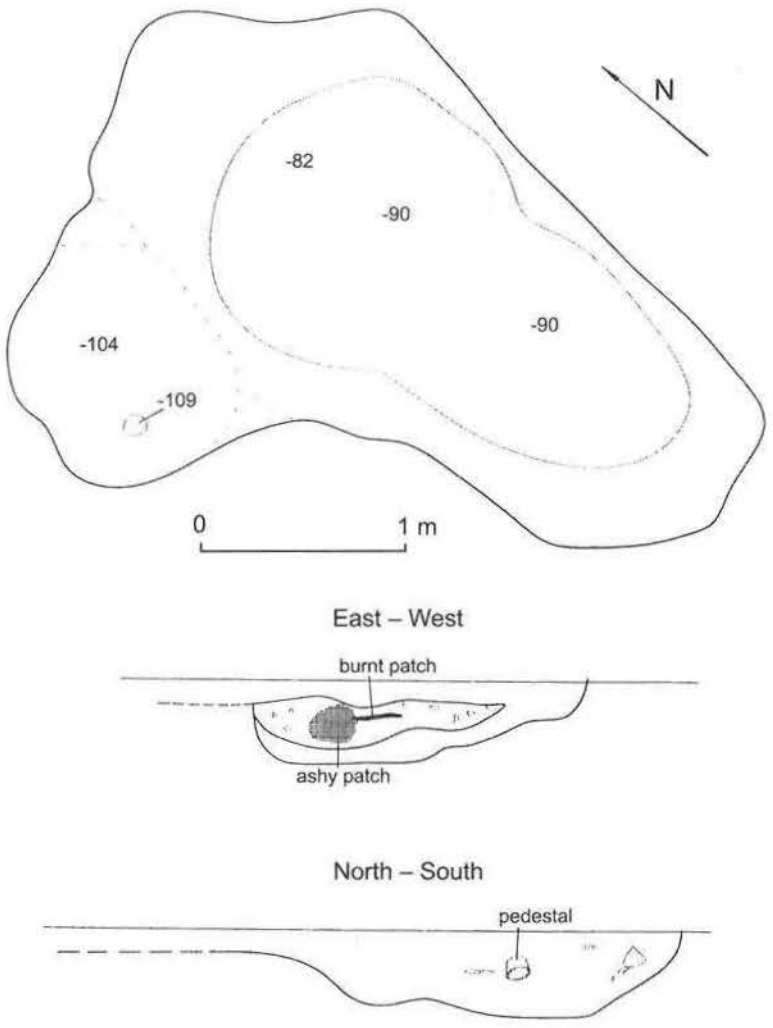


Fig. 88. Feature 19

7. Body fragment. Dark red, tempered with chaff and sand, from a larger vessel decorated with a deeply incised line. Wall th.: 1.1 cm.
8. Body fragment. Reddish-grey, tempered with chaff and sand, from a porous, poorly fired, larger vessel made from poorly levigated clay and polished on its interior, decorated with a deep V shaped line. Wall th.: 0.7–1.0 cm.
9. Body fragment. Greyish-dark red, tempered with chaff and sand, from a poorly fired, worn vessel decorated with a pair of parallel lines. Wall th.: 0.7 cm.
10. Body fragment. Light red, tempered with chaff and sand, "sandwich" core, from a poorly fired, thin-walled vessel made from finely levigated clay, decorated with lightly incised, parallel short lines under an incised line. Wall th.: 0.4 cm.
11. Body fragment. Light red exterior, grey interior, tempered with chaff and sand, from the lower part of a thick-walled, globular vessel with worn surface, decorated with a pattern of lightly incised zig-zag lines. Wall th.: 1.2–1.4 cm.
12. Body fragment. Bright red, from the lower part of a thick-walled, well-fired, large storage jar made from medium well levigated clay, with traces of polishing in its interior. Wall th.: 1.2 cm.

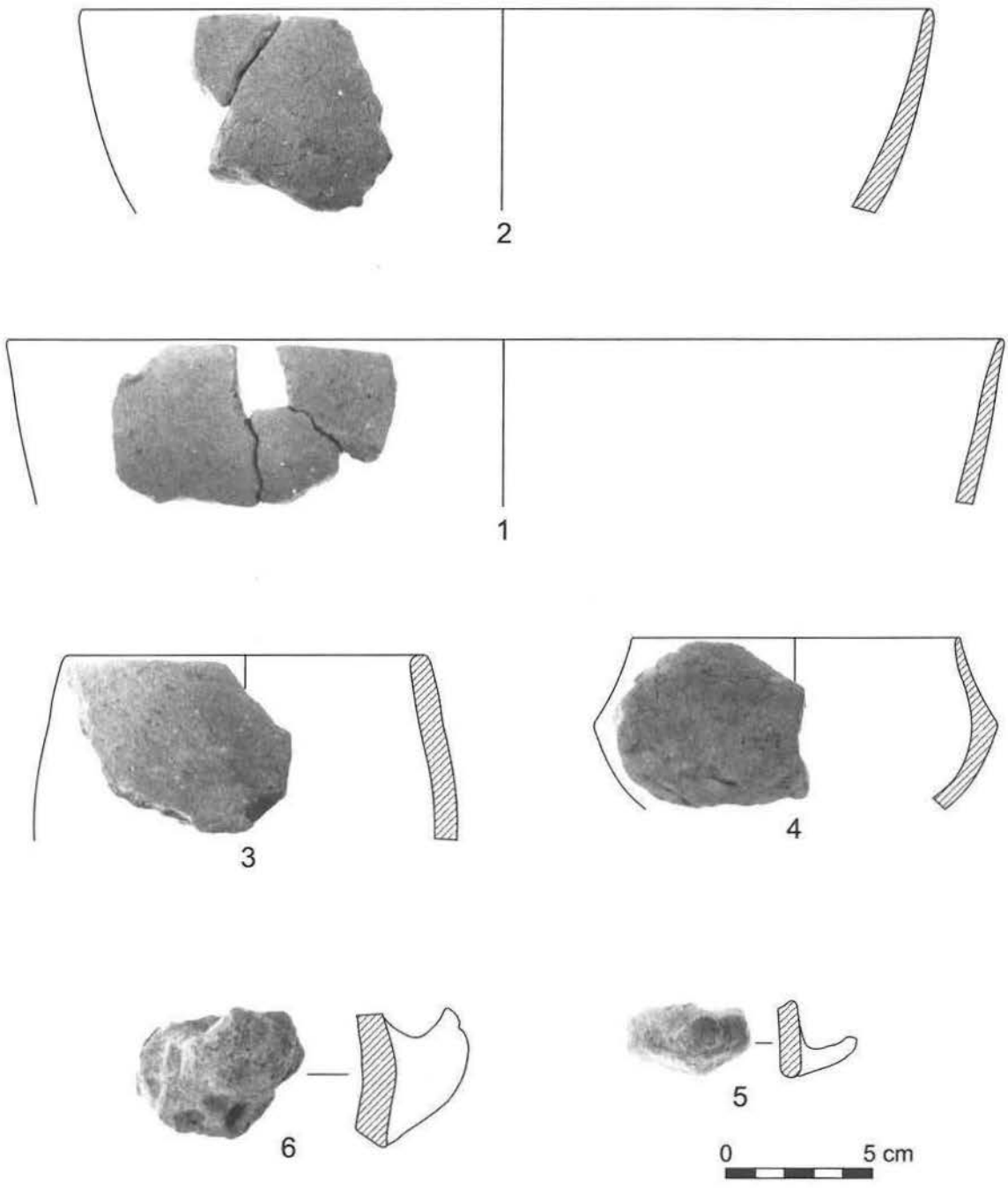


Fig. 89. Finds from Feature 19

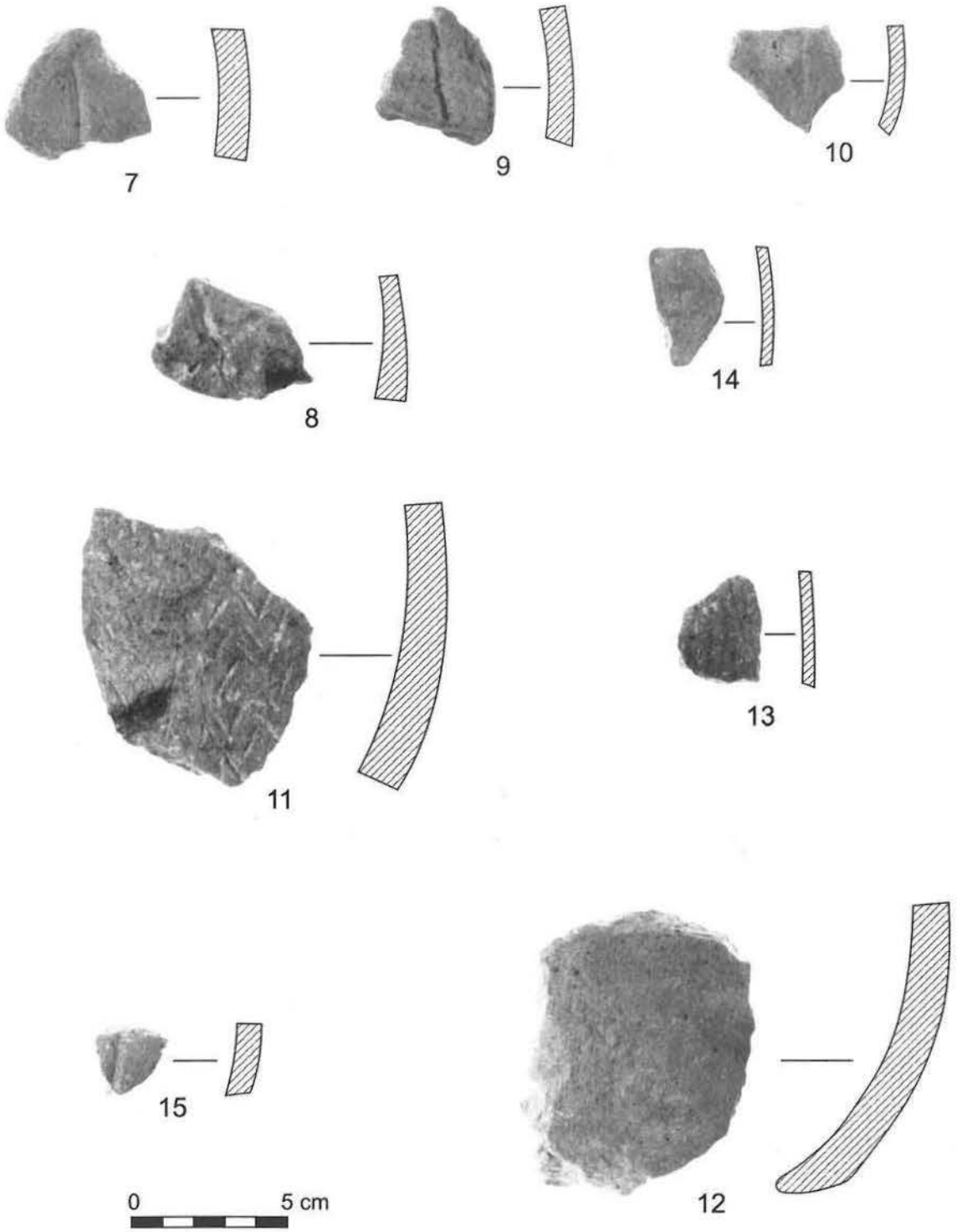


Fig. 90. Finds from Feature 19

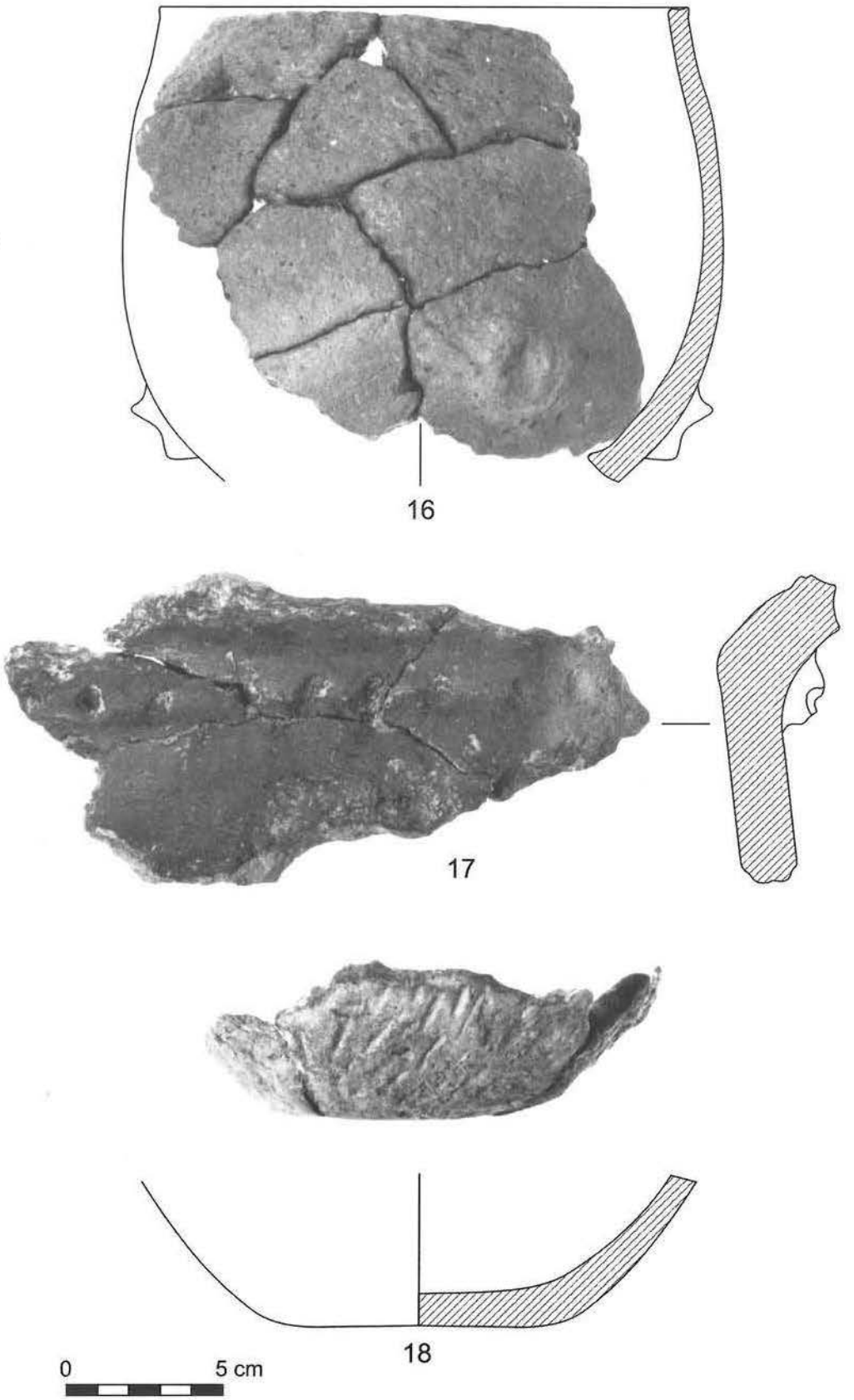


Fig. 91. Finds from Feature 19

13. Body fragment. Dark red, tempered with chaff and sand, from a thin-walled, porous vessel, decorated with a pattern of densely incised parallel lines and traces of polishing in its interior. Wall th.: 0.4 cm.
14. Body fragment. Reddish-brown, tempered with chaff and sand, from the shoulder of a well-fired, thin-walled, globular vessel made from finely levigated clay, decorated with two smoothed-in lines. Wall th.: 0.3 cm.
15. Body fragment. Dark red, tempered with chaff, sand and crushed pottery, from a well-fired, larger vessel made from finely levigated clay and decorated with a deeply incised line. Wall th.: 0.7–0.8 cm.
16. Vessel profile. Light red, tempered with chaff and sand, "sandwich" core, from a poorly fired, porous, bomb shaped vessel with worn surface and decorated with finger impressions on the rim and a round, flat, finger impressed knob on the belly. Rim diam.: 17 cm, wall th.: 0.6–1.2 cm.
17. Body fragment. Blackish-grey exterior, red interior, tempered with chaff and sand, from a well-fired, thick-walled, globular vessel with funnel shaped neck made from poorly levigated clay. The shoulder is decorated with a large, finger impressed rib. Rim diam.: over 40 cm, shoulder diam.: c. 34 cm, wall th.: 1.8–2.5 cm.
18. Base fragment. Light greyish-cream, tempered with chaff and sand, "sandwich" core, from a poorly fired, worn, bomb shaped vessel made from poorly levigated clay, decorated with a 'rain pattern' of densely incised short, vertical lines. Base diam.: 8.5 cm, wall th.: 0.7–1.4 cm.
19. Rim and body fragment. Light red, tempered with chaff and sand, "sandwich" core, from a poorly fired, porous, globular vessel with an extremely worn surface, made from poorly levigated clay. The rim was originally decorated with finger impressions, of which very little is visible. Rim diam.: 18 cm, wall th.: 0.6–0.9 cm.
20. Rim and body fragment. Dark red and grey mottled, tempered with chaff and sand, "sandwich" core, from a poorly fired, large, bomb shaped vessel made from poorly levigated clay, originally polished both on its exterior and interior, of which little survives. A section of the rim is ribbed on the inner side, reflecting the careless smoothing of the vessel mouth. Rim diam.: 25 cm.
21. Body fragment. Red exterior, brownish-red interior, tempered with chaff and sand, "sandwich" core, from a poorly fired, large, globular storage jar made from poorly levigated clay, decorated with a large, flat, round knob. Wall th.: 1.8 cm.
22. Body fragment. Bright red, from the shoulder of a poorly fired, large, porous storage jar made from poorly levigated clay with a worn surface, decorated with a row of finger impressions. Wall th.: 1.0–1.5 cm.
23. Body fragment. Blackish-red, mottled, from a well-fired, large storage jar made from poorly levigated clay, decorated with finger-drawn barbotine. Wall th.: 1.7 cm.
24. Body fragment. Light yellowish-red, tempered with chaff and sand, from a poorly fired, large, porous storage jar made from poorly levigated clay, decorated with finger-drawn barbotine. Wall th.: 1.4 cm.
25. Rim and body fragment. Red, tempered with chaff and sand, from a well-fired, biconical bowl with incurving upper part made from finely levigated clay and covered with a polished, dark red slip both on its exterior and interior. Rim diam.: 27 cm, wall th.: 0.4–0.9 cm.
26. Vessel profile. Red and cream, mottled, "sandwich" core, from an extremely worn small bowl. The vessel is worn to the extent that the black vessel core is visible in some spots. Rim diam.: 9.5 cm, base diam.: 5.0 cm, h.: 5.0 cm.
27. Base fragment. Dark red, tempered with chaff and sand, from an extremely worn storage jar. Base diam.: 11.5 cm.
28. Base fragment. Light brown exterior, red interior, from a small bowl originally polished both on its exterior and interior, decorated with three lightly incised, parallel lines extending to the base. Base diam.: 7.0 cm.
29. Pedestal. Curved, conical pedestal with red exterior and light yellow interior, tempered with chaff and sand. It is worn to the extent that its original colour has hardly survived and only the black core of the vessel is visible. Base diam.: 11.0 cm, h.: 7.9 cm.
30. Fragment of a pedestalled vessel. Light red, tempered with chaff, sand and crushed pottery, from a smaller pedestalled vessel covered with a polished, dark red slip both on its exterior and interior. The fragment comes from the juncture of the pedestal and the bowl. Diam. of juncture: c. 6.5 cm.

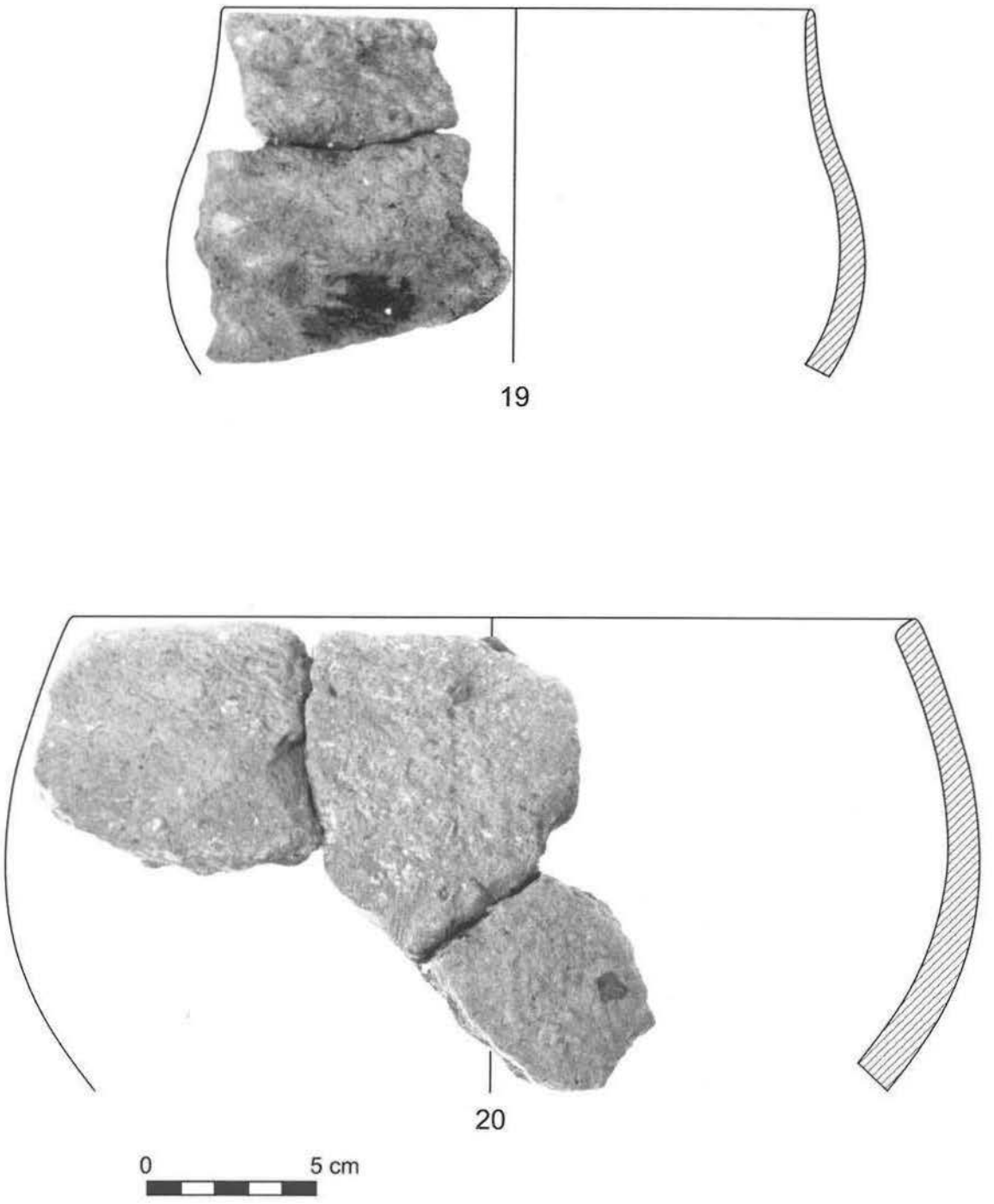


Fig. 92. Finds from Feature 19

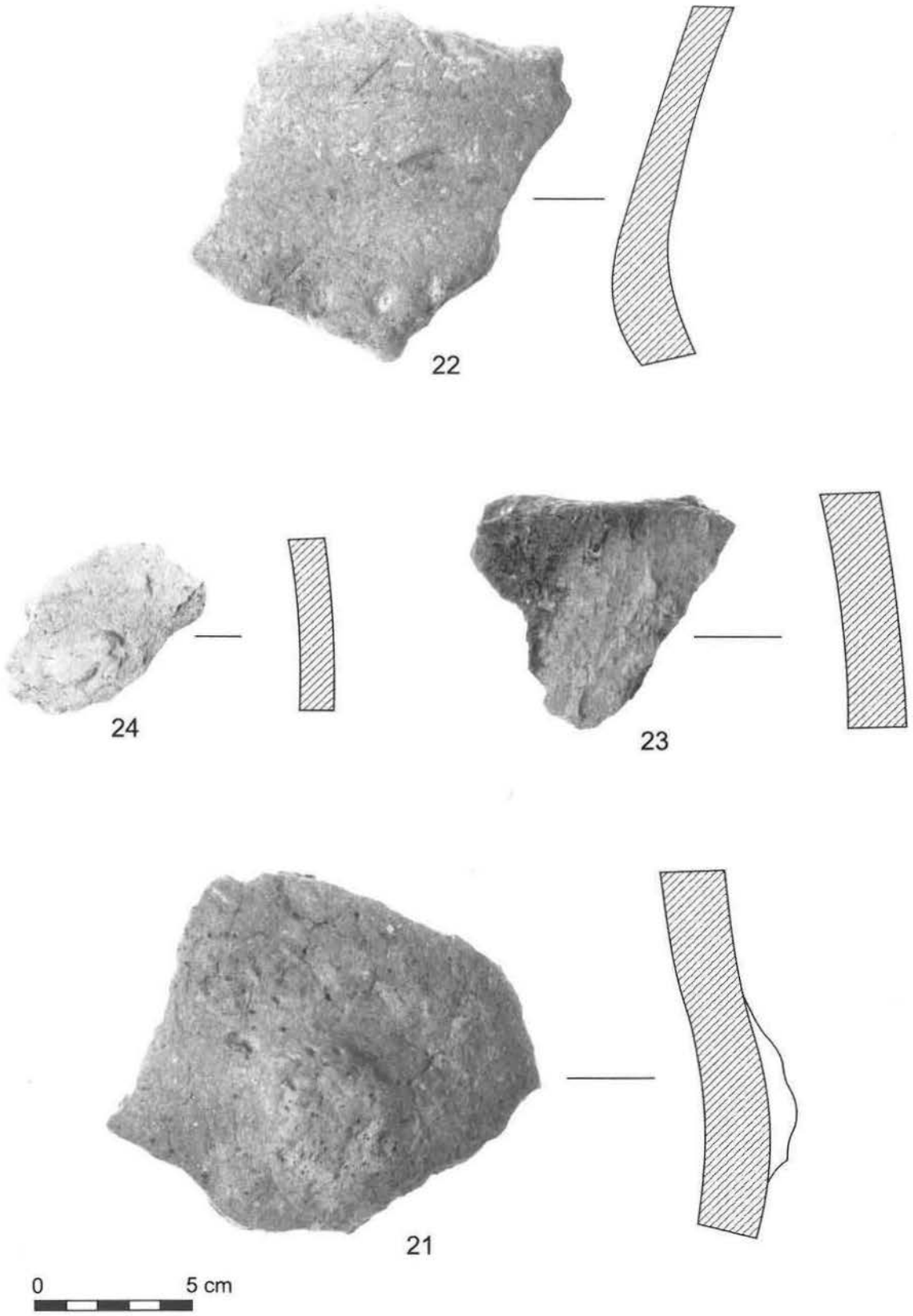


Fig. 93. Finds from Feature 19

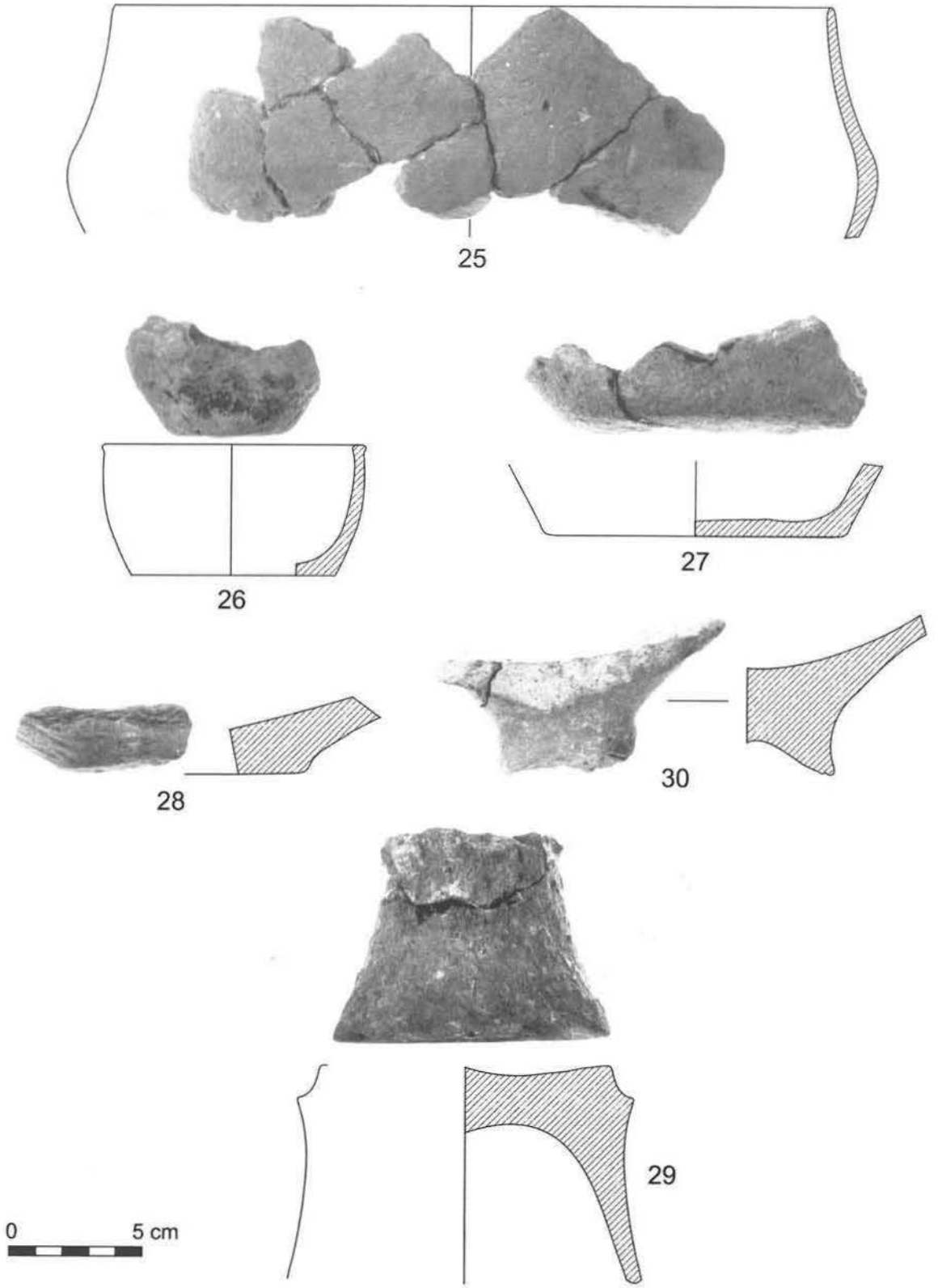


Fig. 94. Finds from Feature 19

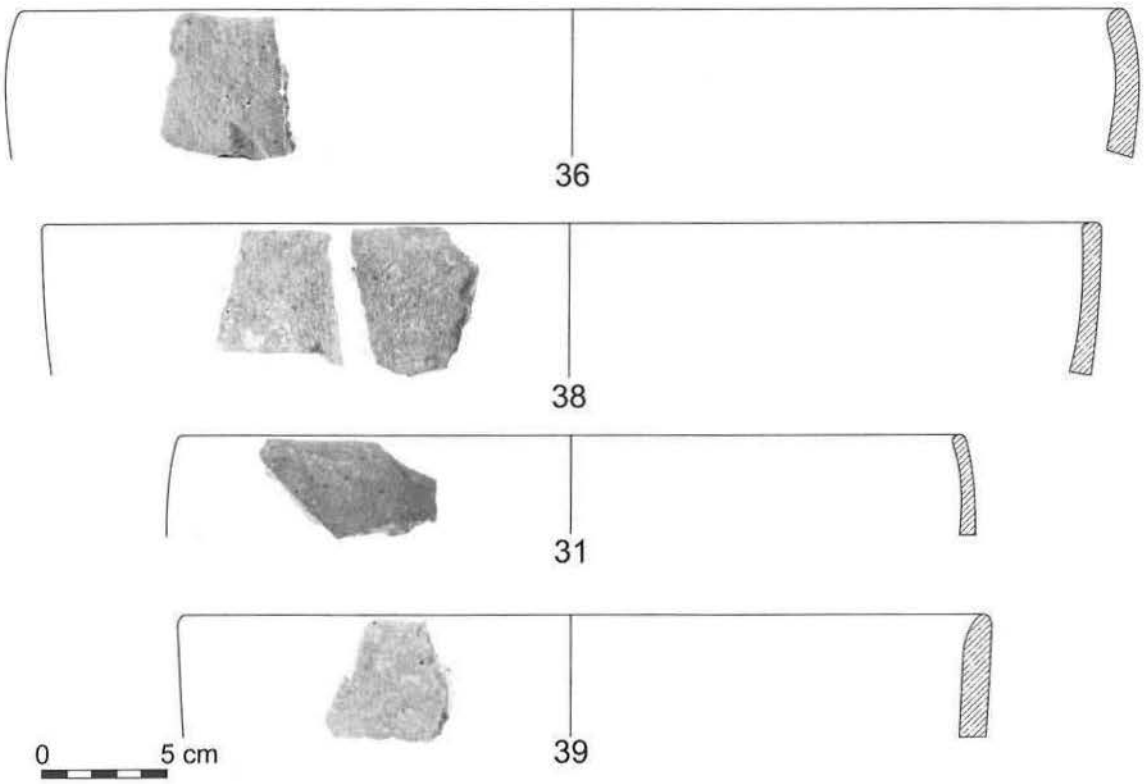


Fig. 95. Finds from Feature 19

31. Rim fragment. Red, tempered with chaff and sand, from a well-fired, hemispherical bowl with slightly inturned rim made from finely levigated clay and covered with a polished, dark red slip both on its exterior and interior. Rim diam.: 31 cm, wall th.: 0.5 cm.
32. Rim fragment. Light red, tempered with chaff and sand, from a well-fired bowl with outturned rim, polished both on its exterior and interior. Rim diam.: 17 cm, wall th.: 0.5–0.7 cm.
33. Rim fragment. Reddish, tempered with chaff and sand, from a well-fired vessel with cylindrical neck made from finely levigated clay. Rim diam.: 17 cm, wall th.: 0.5 cm.
34. Rim fragment. Light red, tempered with chaff and sand, from a well-fired bowl made from finely levigated clay and covered with a polished, dark red slip both on its exterior and interior. Rim diam.: 34 cm, wall th.: 0.9 cm.
35. Rim fragment. Light red, tempered with chaff and sand, "sandwich" core, from a poorly fired vessel with slightly inturned rim made from finely levigated clay and polished both on its exterior and interior. Rim diam.: 19 cm, wall th.: 1.0 cm.
36. Rim fragment. Light red, tempered with chaff and sand, "sandwich" core, from a poorly fired, large, worn bowl with inturned rim made from poorly levigated clay. Rim diam.: 45 cm, wall th.: 1.3–1.5 cm.
37. Rim fragment. Red, tempered with chaff and sand, "sandwich" core, from a poorly fired, worn bowl with outturned rim made from poorly levigated clay. Rim diam.: 26 cm, wall th.: 0.8 cm.
38. Rim fragment. Red, "sandwich" core, from a poorly fired, large bowl with straight cut rim made from finely levigated clay. Rim diam.: 41 cm, wall th.: 1.0 cm.
39. Rim fragment. Red, tempered with chaff and sand, from a poorly fired, large bowl made from finely levigated clay. Rim diam.: 32 cm, wall th.: 1.4 cm.
40. Rim fragment. Reddish-grey, tempered with chaff, from a poorly fired, porous, narrow mouthed, flask shaped vessel with worn surface made from poorly levigated clay, decorated with finger impressions under the slightly outturned rim. Rim diam.: 7 cm, wall th.: 0.4–1.0 cm.

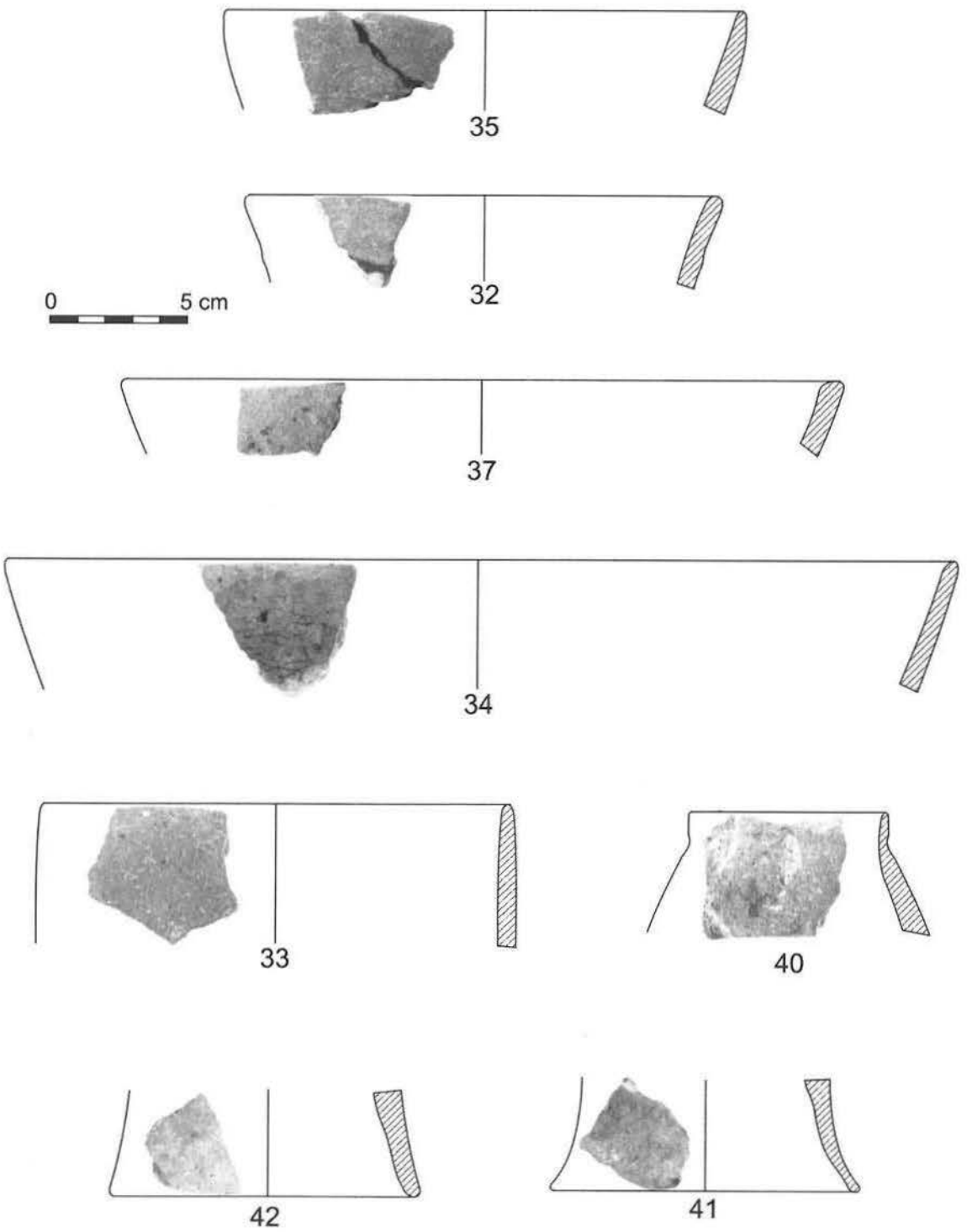


Fig. 96. Finds from Feature 19

41. Pedestal fragment. Light red exterior, grey mottled interior, tempered with chaff and sand, from a well-fired, low, flaring pedestal with worn surface made from poorly levigated clay. Base diam.: 11 cm, wall th.: 0.2–0.8 cm.
42. Pedestal fragment. Light red and cream exterior, red interior, tempered with chaff and sand, from a well-fired, flaring pedestal made from finely levigated clay. Base diam.: 11 cm, wall th.: 0.5–0.8 cm.

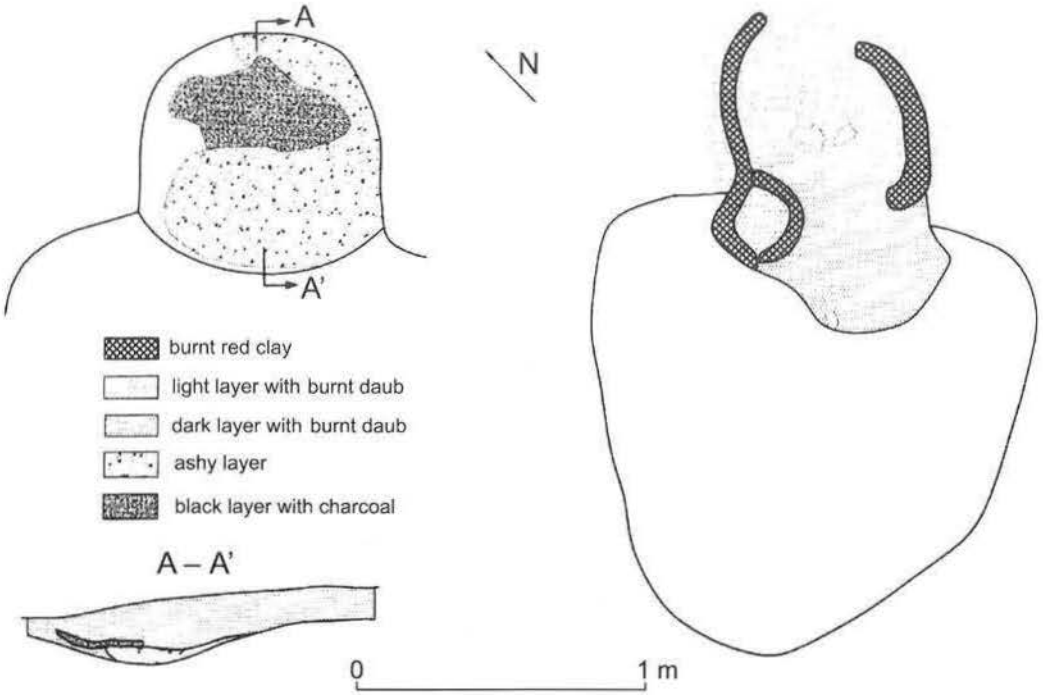


Fig. 97. Feature 20

Feature 20 *(Fig 97)*

A small, shallow feature that was covered with a rich assemblage of finds. Its patch first appeared under the burnt debris. The thick debris layer was contiguous with the burnt debris covering feature 19 to its north and thus it only became obvious that this was a separate feature after the debris had been cleared. The burnt debris was made up of numerous large pottery sherds and vessels that could be assembled from their fragments. Their position revealed that they had been crushed by the collapsing, burning walls. Beside the vessel fragments we found a human foot shaped clay fragment, no doubt part of an anthropomorphic, footed vessel. The fill was made up of alternating red burnt and ashy patches, under which lay a burnt, porous baking plate bordered by 10–12 cm high and 8–10 cm thick porous clay walls. A strongly burnt, black layer was uncovered underneath this baking plate. This feature was interpreted as a hearth.

Finds[23] *(Figs 98–101)*

A total of 738 pottery fragments, some chipped stone implements, 1 whetstone and 8 burnt daub fragments (1.4 kg) were recovered from this feature.

1. Body fragment. Light grey exterior, red interior, tempered with chaff and sand, from the globular belly of a well-fired, large storage jar with relatively thin walls compared to its size, made from finely

[23] Inv. no. 2000.91.1–29.

levigated clay, with the remains of a partly broken flat, round knob. The vessel was decorated with finger-drawn barbotine and Schlickwurf patterns. Wall th.: 0.7 cm.

2. Body fragment. Red, tempered with chaff and sand, "sandwich" core, from a poorly fired vessel made from poorly levigated clay, with the stub of a vertically set handle or lug, decorated with three deeply incised vertical lines under the stub. Wall th.: 0.5–2.2 cm.
3. Body fragment. Dark grey exterior, red interior, tempered with chaff and sand, from a well-fired, globular storage jar with relatively thin walls compared to its size, made from poorly levigated clay, decorated with a flat, round knob and finger-drawn barbotine. Wall th.: 0.7–0.9 cm.
4. Lug handle. Light red, tempered with chaff, sand and crushed pottery, from a large storage jar on which it had been set horizontally.
5. Body fragment. Red exterior, black interior, from a relatively thin-walled, smaller storage jar with the stub of a vertically set strap handle on the shoulder, decorated with deeply incised lined by the handle. Wall th.: 0.7 cm.
6. Handle. Red, tempered with chaff and sand, decorated with a row of finger impressions, from a smaller storage jar.
7. Rim fragment. Red, tempered with chaff and sand, from a bomb shaped vessel with slightly inturned rim. Rim diam.: 22 cm, wall th.: 0.7–0.8 cm.
8. Body fragment. Dark grey, tempered with chaff and sand, from the shoulder of a smaller storage jar with rough surface and a small, vertically set handle. Wall th.: 0.9 cm.
9. Body fragment. Red, tempered with chaff and sand, from a large storage jar, decorated with a finger impressed rib on the shoulder. Wall th.: 1.3 cm.
10. Body fragment. Light cream exterior, greyish interior, tempered with chaff, sand and crushed pottery, from a deep, globular bowl, decorated with a vertical row of pinched decoration on the shoulder. Wall th.: 0.7 cm.
11. Body fragment. Red, tempered with chaff and sand, from the shoulder of a large storage jar with worn interior, polished on the exterior and decorated with a row of finger impressions under the outturned rim. Wall th.: 1.1–1.3 cm.
12. Fragment of a pedestalled vessel. Light reddish-cream, tempered with chaff and sand, from a bowl set on a pedestal, covered with a polished, dark red slip both on its exterior and interior. Wall th.: 0.5–0.9 cm.
13. Fragment of a pedestalled vessel. Light greyish-brown, tempered with chaff and sand, from a high, conical pedestal, polished on the exterior, with the base of the upper part. Base diam.: 13 cm, wall th.: 0.8 cm.
14. Clay foot. Blackish-red, compact clay foot tempered with chaff, sand and crushed pottery, well-fired, made from finely levigated clay, modelled on a human left foot, probably from an anthropomorphic vessel. It is decorated with a straight line at the heel and with a deeply incised curved line on the outer side. Sole: 6.2 x 3.6 cm, h.: 7.1 cm, upper breakage surface: 8.6 x 4.7 cm.
15. Bowl (assembled from its fragments). Reddish-grey, mottled, well-fired bowl tempered with chaff and sand, made from finely levigated clay and polished on its exterior. The carination runs 3.2 cm under the rim. Rim diam.: 25 cm, base diam.: 9 cm, h.: 11.5 cm, wall th.: 0.3–1.3 cm.

Feature 21 *(Fig. 102)*

North oriented longish pit. Its length was 370 cm, its greatest width in the southern part was 140 cm. The pit became shallower towards the north. Its average width was 150 cm, its depth was 45–50 cm near the edges and 67 cm in the depression in its middle. The slightly deeper part lay in the centre of the pit; an ashy patch containing many sherds lay above it.

Finds[24] *(Figs 103–105)*

A total of 323 pottery fragments, some chipped stone implements, 1 grinding stone and 1 whetstone were recovered from this feature.

[24] Inv. no. 2000.92.1–23.

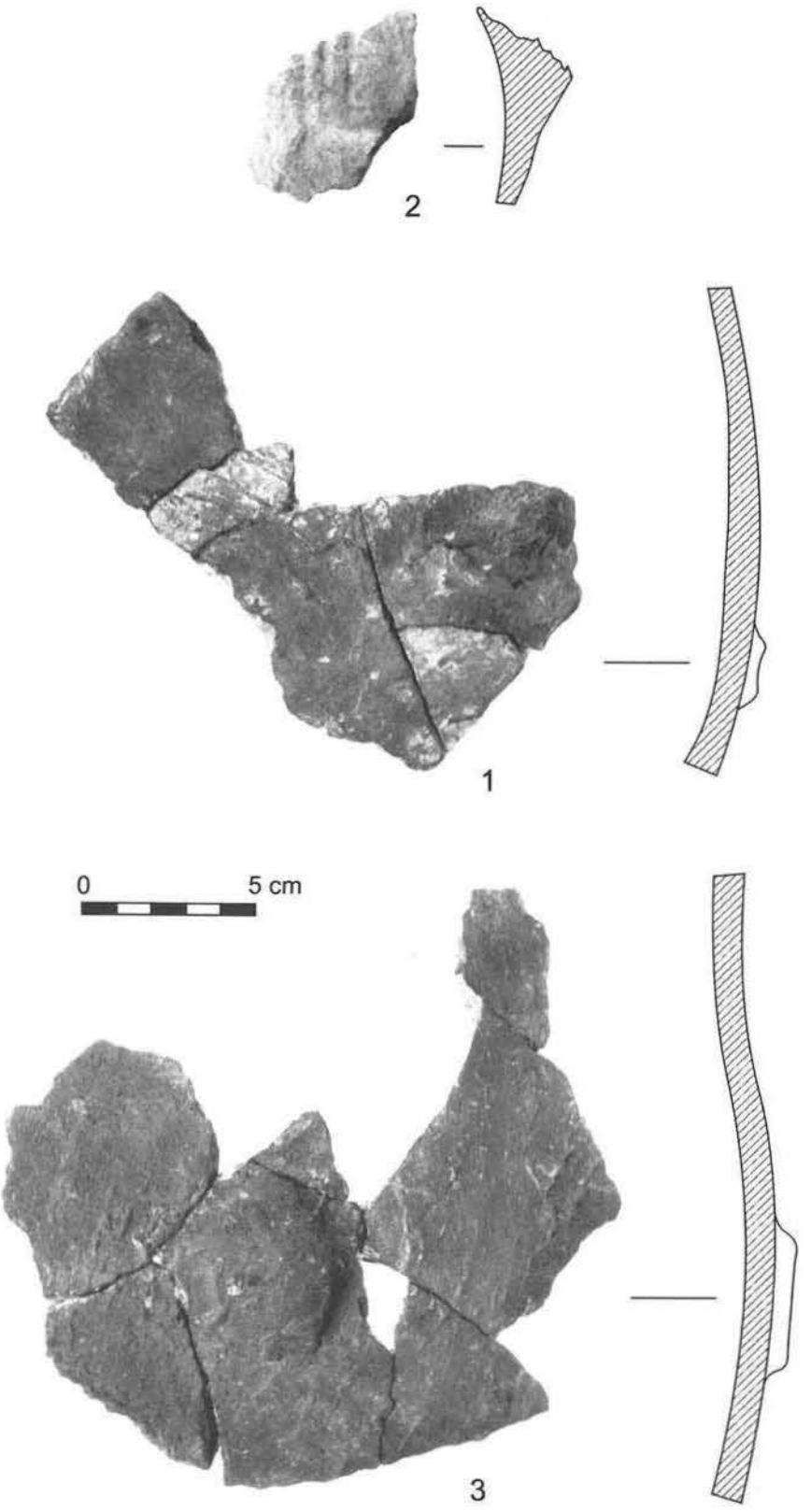


Fig. 98. Finds from Feature 20

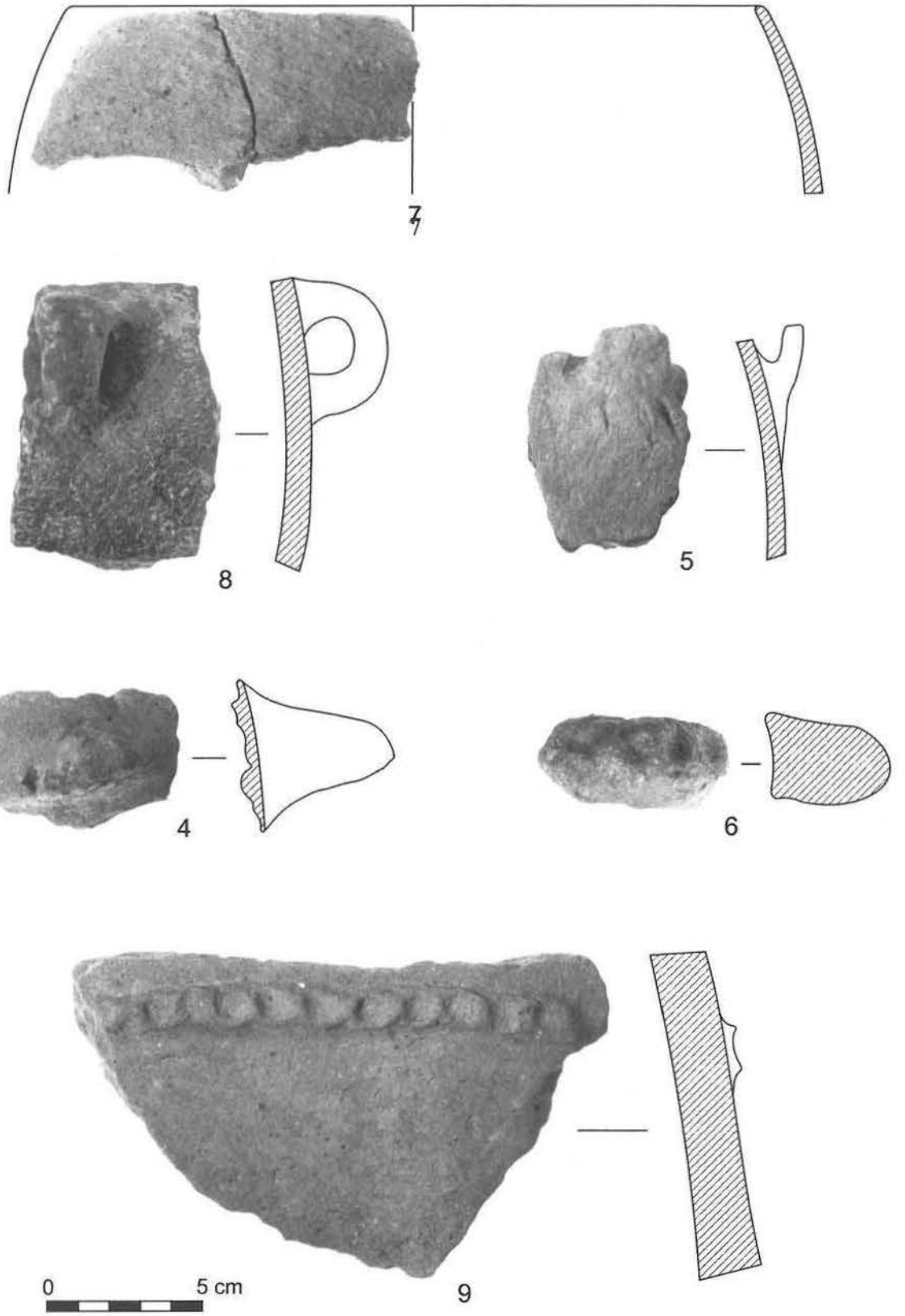


Fig. 99. Finds from Feature 20

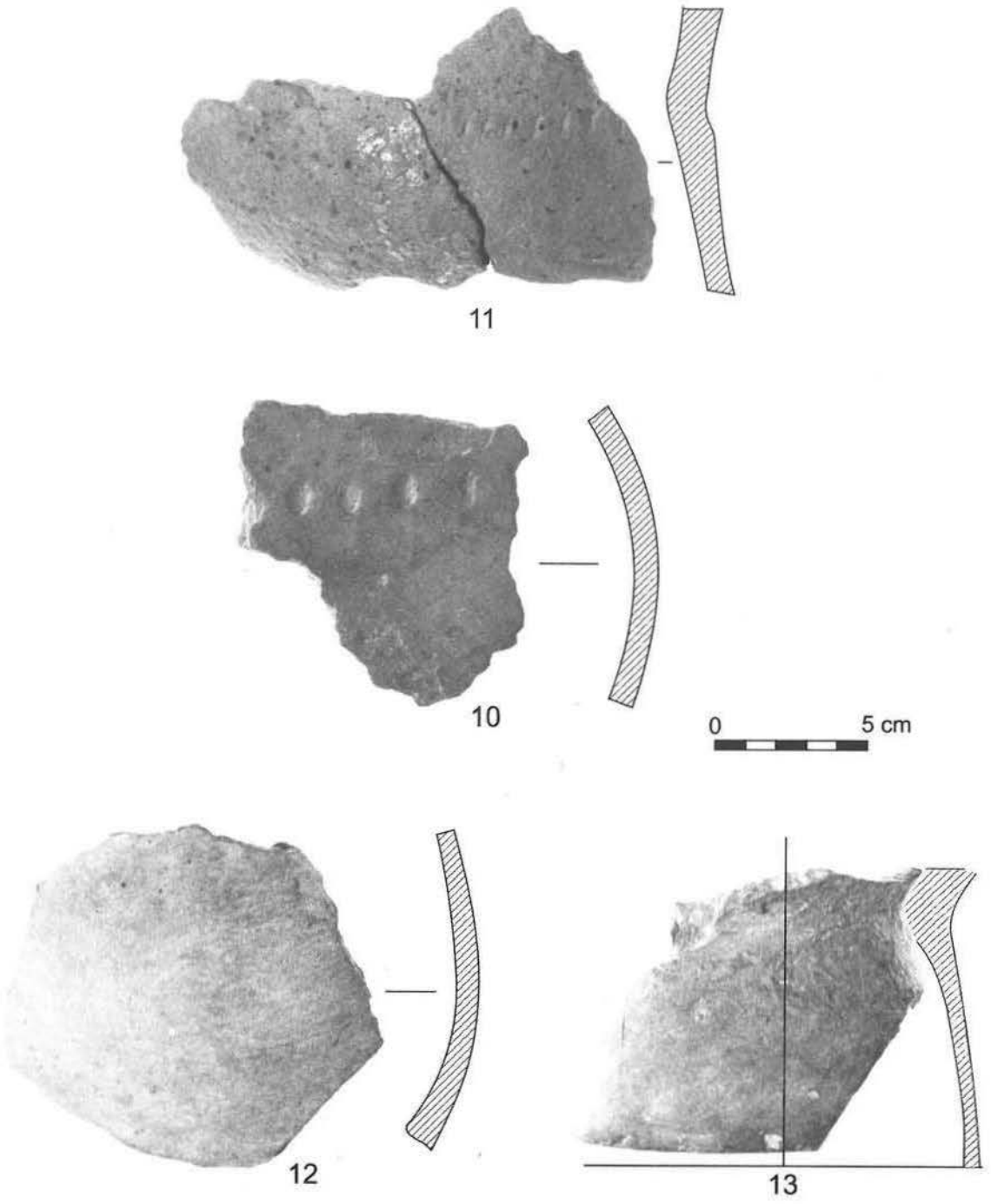


Fig. 100. Finds from Feature 20

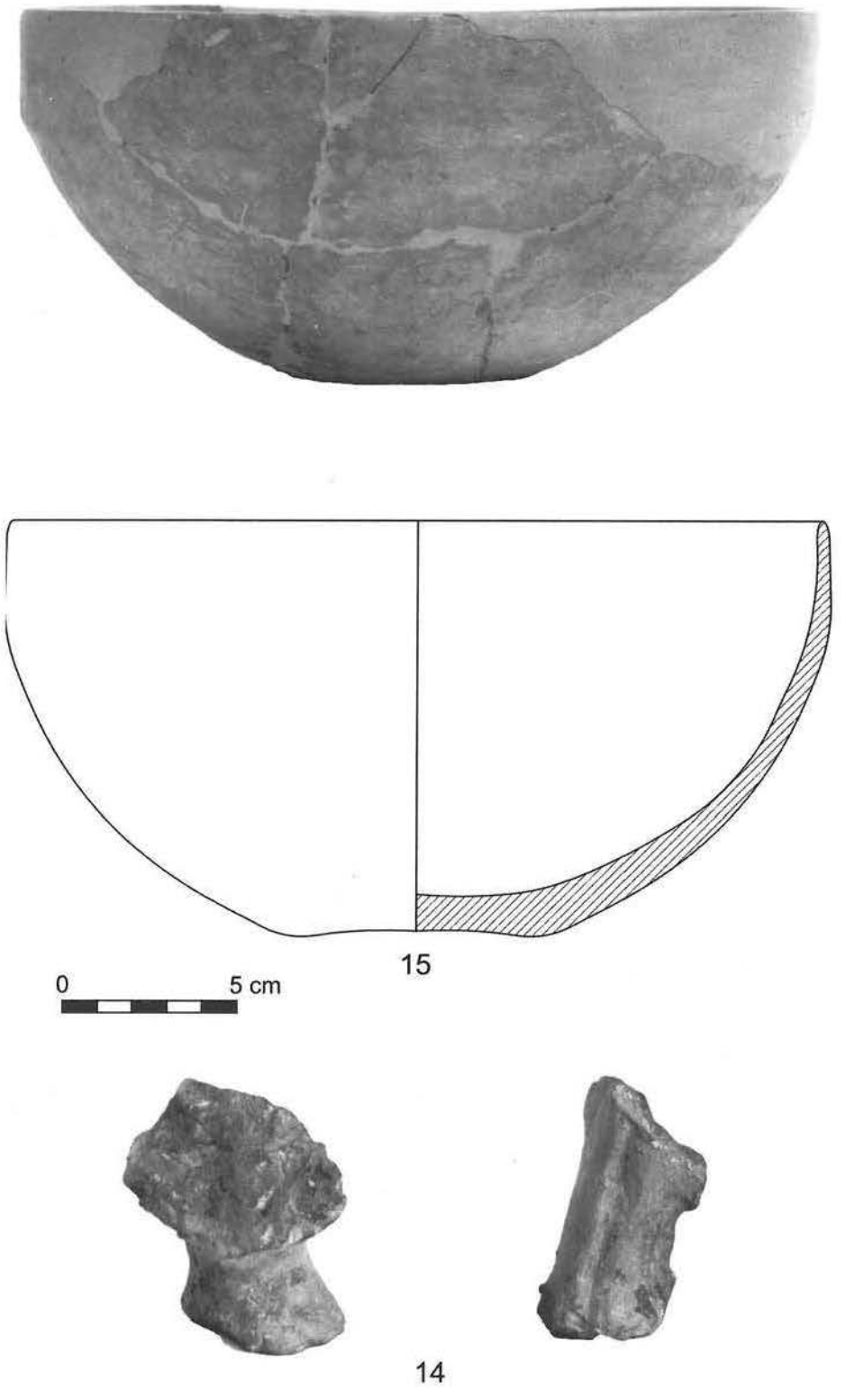


Fig. 101. Finds from Feature 20

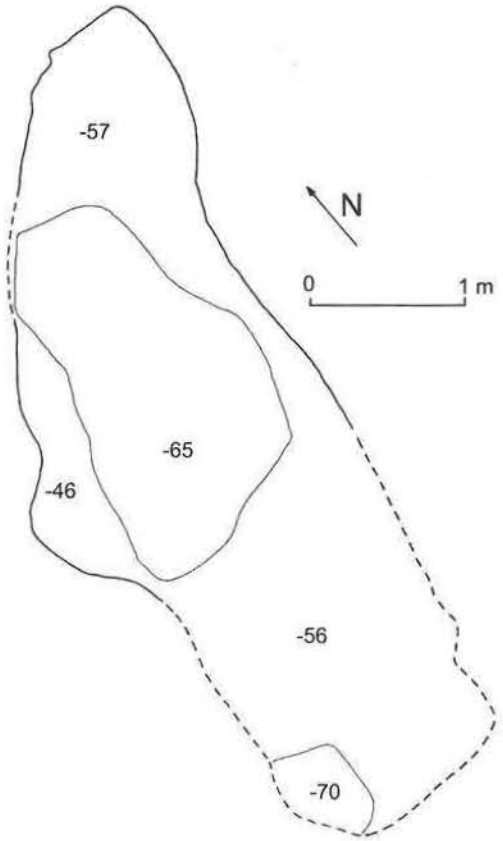


Fig. 102. Feature 21

1. Body fragment. Yellowish-red, tempered with chaff and sand, "sandwich" core, from a poorly fired, worn, globular storage jar with a vertically set handle, made from poorly levigated clay, decorated with three finger impressions above and below the handle. Wall th.: 1.0–1.6 cm.
2. Body fragment. Red, tempered with chaff and sand, from a poorly fired, worn storage jar made from poorly levigated clay and decorated with a large, flat knob. Wall th.: 1.2–1.3 cm.
3. Lug. Dark red lug handle with flattened top, decorated with three finger impressions, tempered with chaff and sand, from a large storage jar.
4. Body fragment. Red, tempered with chaff and sand, from the belly of a thick-walled, globular storage jar. Average wall th.: 1.3 cm.
5. Body fragment. Red and dark grey, mottled, tempered with chaff and sand, from a large storage jar with worn surface that was originally polished, decorated with two polished ribs on the shoulder. Average wall th.: 1.1 cm.
6. Body fragment. Dark grey exterior, bright red interior, tempered with chaff, sand and crushed pottery, from a poorly fired, large storage jar made from poorly levigated clay, decorated with finger-drawn barbotine. Average wall th.: 0.7 cm.
7. Body fragment. Light red, tempered with chaff, sand and crushed pottery, "sandwich" core, from a poorly fired storage jar with a vertically set handle, made from poorly levigated clay. The handle is broken and the smoothing of the juncture can be clearly made out. Average wall th.: 1.0 cm.
8. Handle. Light red vessel handle, tempered with chaff and sand, "sandwich" core, from a poorly fired storage jar made from poorly levigated clay. The handle was set on the vessel horizontally; there are two round perforations in its centre.

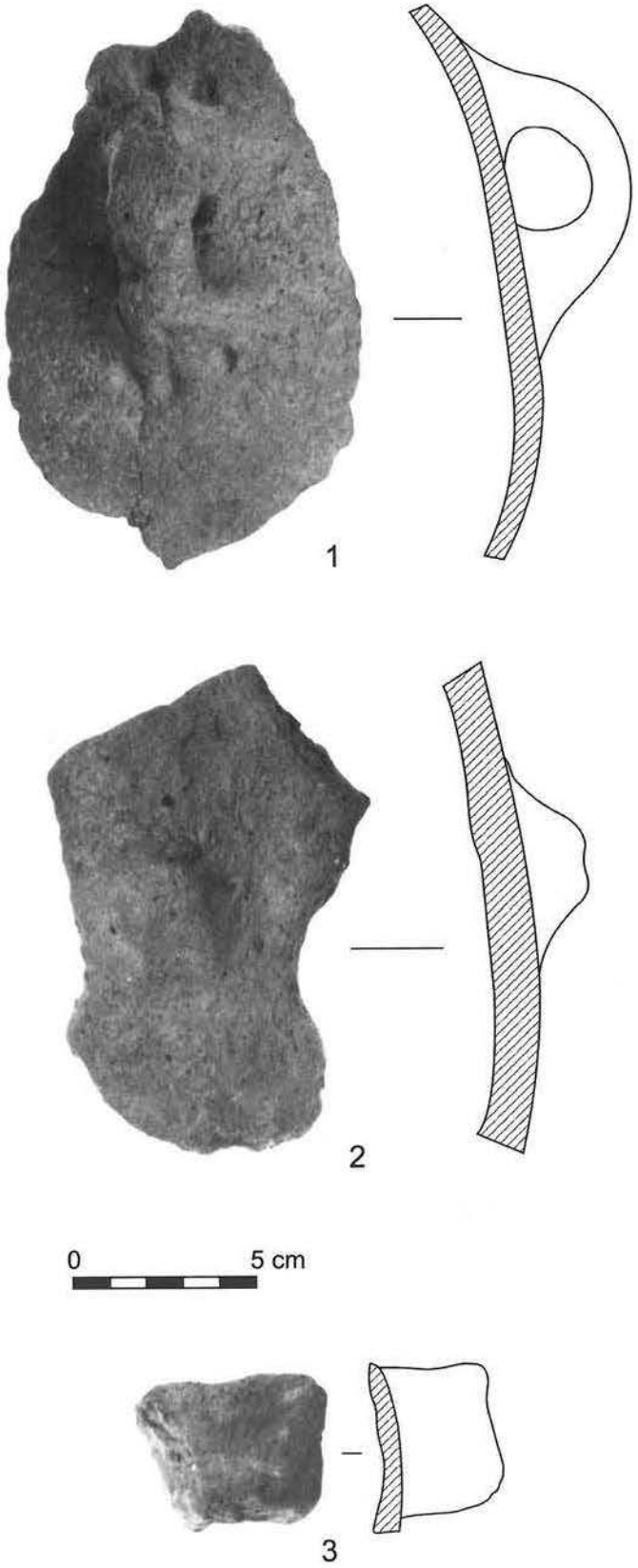


Fig. 103. Finds from Feature 21

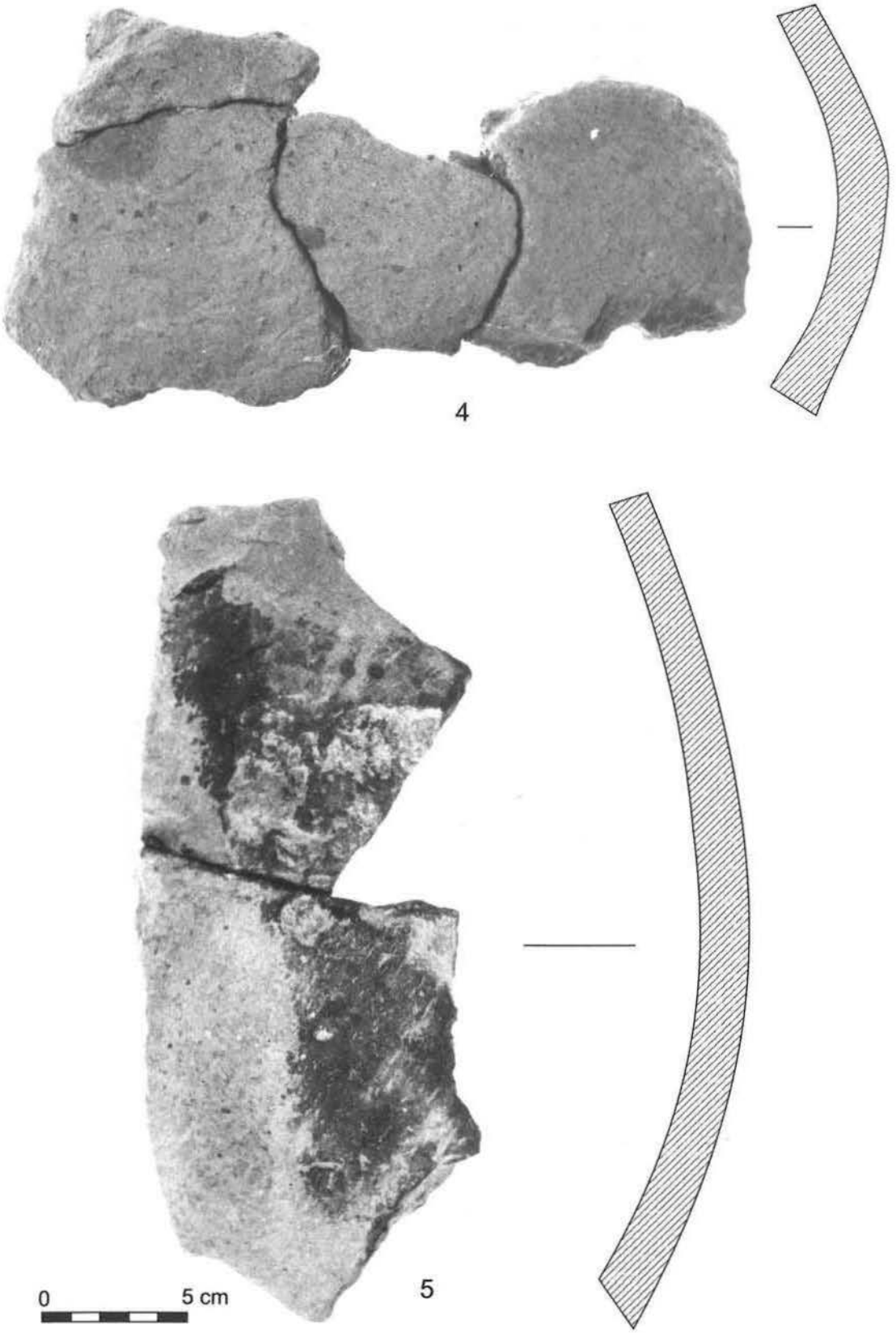


Fig. 104. Finds from Feature 21

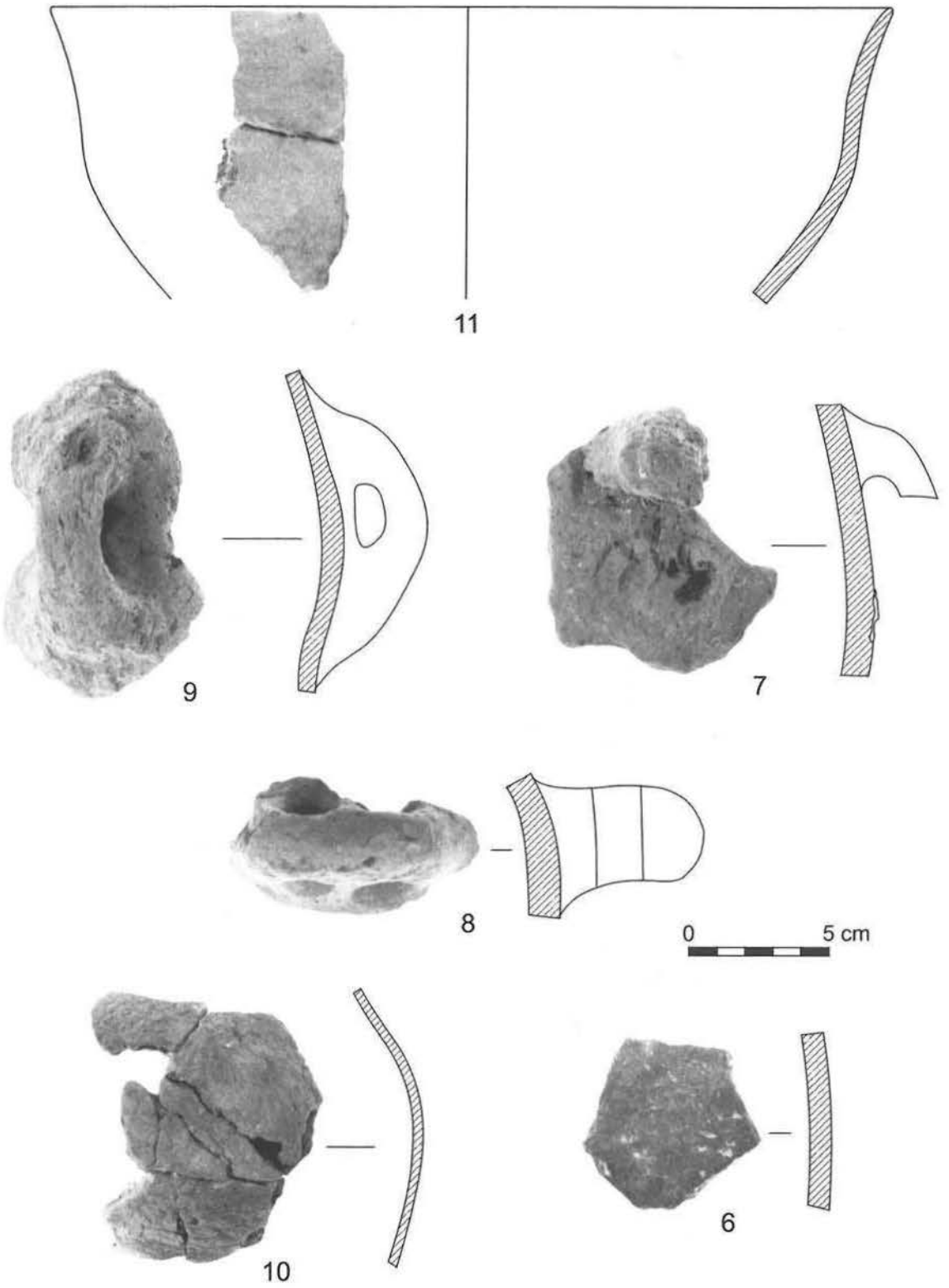


Fig. 105. Finds from Feature 21

9. Handle. Bright red strap handle, tempered with chaff and sand, "sandwich" core, from a poorly fired, smaller storage jar made from poorly levigated clay. The handle was set on the vessel vertically. Average wall th.: 0.5–0.7 cm.
10. Body fragment. Blackish-red, tempered with chaff and sand, "sandwich" core, from the belly of a poorly fired, thin-walled, globular pot made from poorly levigated clay. Average wall th.: 0.4 cm.
11. Rim and body fragment. Red, "sandwich" core, from a well-fired, biconical bowl made from finely levigated clay and covered with a polished, dark red slip both on its exterior and interior. The upper part is incurving, the carination is light. Rim diam.: 30 cm, wall th.: 0.3–0.6 cm.

Feature 22 *(Fig. 106)*

North oriented, oval pit. It is not the continuation of Feature 21 since it lies a little to its east. Similarly to the other long pits, a deeper trench runs along its centre, whose walls lie parallel to the pit wall. The depth of the trench was 66 cm, the average depth of the pit's other sections was 52 cm.

Finds[25] *(Figs 107–108)*

1. Body fragment. Red, tempered with chaff, sand and crushed pottery, "sandwich" core, from a poorly fired, large, globular storage jar made from poorly levigated clay, decorated with two spiral meanders, which are probably set in opposite directions. Wall th.: 0.9–1.0 cm.
2. Rim and body fragment. Red, tempered with chaff and sand, from a well-fired, bomb shaped vessel, decorated with finger impressions arranged in a V pattern under the rim and two small, finger impressed knobs on the belly, with an oblique impression under the knob. Rim diam.: 27 cm, wall th.: 0.6–1.2 cm.
3. Rim fragment. Light red, tempered with chaff and sand, from a well-fired, large, biconical bowl with straight cut rim made from finely levigated clay. The carination line runs 5.5 cm under the rim. Rim diam.: 29 cm, wall th.: 0.4–0.7 cm.
4. Rim fragment. Light cream, tempered with chaff and sand, from a smaller pot with cylindrical neck and straight cut rim. The uppermost 1.5 cm is black-topped. Rim diam.: 20 cm, wall th.: 1.0 cm.
5. Rim and body fragment. Red, tempered with chaff and sand, from a well fired, worn, biconical bowl with rounded carination made from finely levigated clay. Rim diam.: 24 cm, wall th.: 0.6–0.8 cm.
6. Rim and body fragment. Grey (originally red), tempered with chaff and sand, from a vessel with extremely worn exterior and interior. Only the grey core has survived. The vessel is biconical and decorated with bipartite knob with four vertically incised grooves. Rim diam.: 22 cm, wall th.: 0.2–0.4 cm.
7. Body fragment. Red, tempered with chaff and sand, from a thin-walled, large storage jar. Wall th.: 1.4 cm.
8. Fragment of a pedestalled vessel. Light red, tempered with chaff and sand, from a pedestal with the base of the vessel. Wall th.: 0.6–1.8 cm.

Feature 23

A small, slightly longish pit near Features 20 and 22, lying a little to their east. It did not contain any pottery finds.

Feature 24 *(Fig. 109)*

Similarly to Feature 13, this longish pit belongs to the exceptions with its east–west orientation. The burnt debris layer covered with large pottery fragments lying in a horizontal position was found at a depth of 31 cm. Unlike most other pits, it did not have a longish depression in its floor. Its greatest depth was 74 cm.

[25] Inv. no. 2000.93.1; 2000.105.1–7.

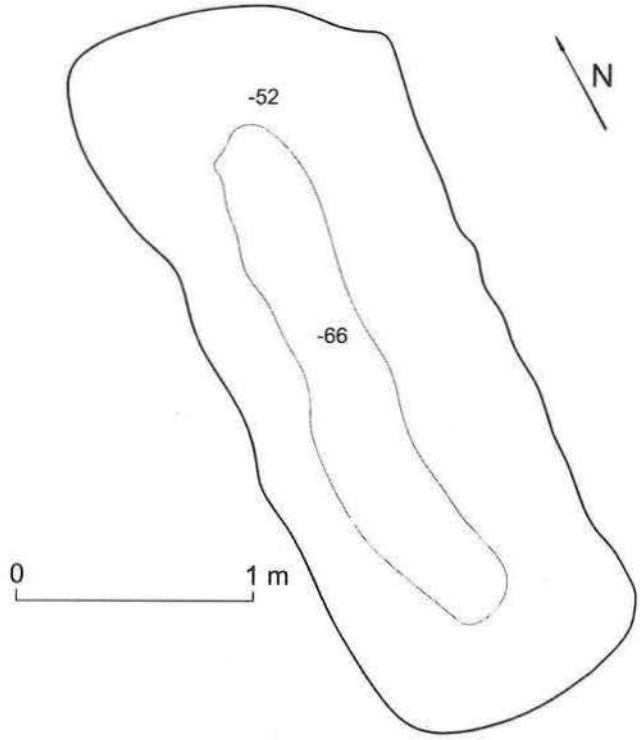


Fig. 106. Feature 22

Finds[26] *(Figs 110–112)*

A total of 522 pottery fragments and several strongly burnt, porous daub fragments were recovered from this feature.

1. Rim fragment. Red, tempered with chaff and sand, from a well-fired, slightly flaring conical bowl made from finely levigated clay and polished both on its exterior and interior. Rim diam.: 26 cm, wall th.: 0.5–0.8 cm.
2. Rim fragment. Red, tempered with chaff and sand, from a small, globular bowl with inturned rim, originally polished both on its exterior and interior. Rim diam.: 20 cm, wall th.: 0.4–0.8 cm.
3. Rim fragment. Red, tempered with chaff and sand, from a well-fired, slightly flaring conical bowl made from finely levigated clay and polished both on its exterior and interior. Rim diam.: 26 cm, wall th.: 0.4–0.7 cm.
4. Rim and body fragment. Red, tempered with chaff and sand, from a well-fired, biconical bowl made from finely levigated clay and covered with a polished, dark red slip both on its exterior and interior (the polish has survived better in its interior). Rim diam.: 20 cm, wall th.: 0.4 cm.
5. Body fragment. Yellowish-grey, mottled, from a well-fired, large storage jar made from finely levigated clay with a worn surface. Wall th.: 0.8–1.0 cm.
6. Body fragment. Red, tempered with chaff and sand, from a well-fired, strongly biconical bowl made from finely levigated clay and covered with a polished, dark red slip both on its exterior and interior. The upper and lower parts are both incurving. Wall th.: 0.4–1.8 cm.
7. Body fragment. Dark red, tempered with chaff and sand, from a thick-walled storage jar decorated with two deeply incised lines. Wall th.: 1.7 cm.
8. Body fragment. Light red, tempered with chaff and sand, "sandwich" core, from a smaller, globular storage jar. The exterior bears tracing of smoothing with some sort of implement. Wall th.: 0.7–0.9 cm.

[26] Inv. no. 2000. 95.17; 2000.107.1–13.

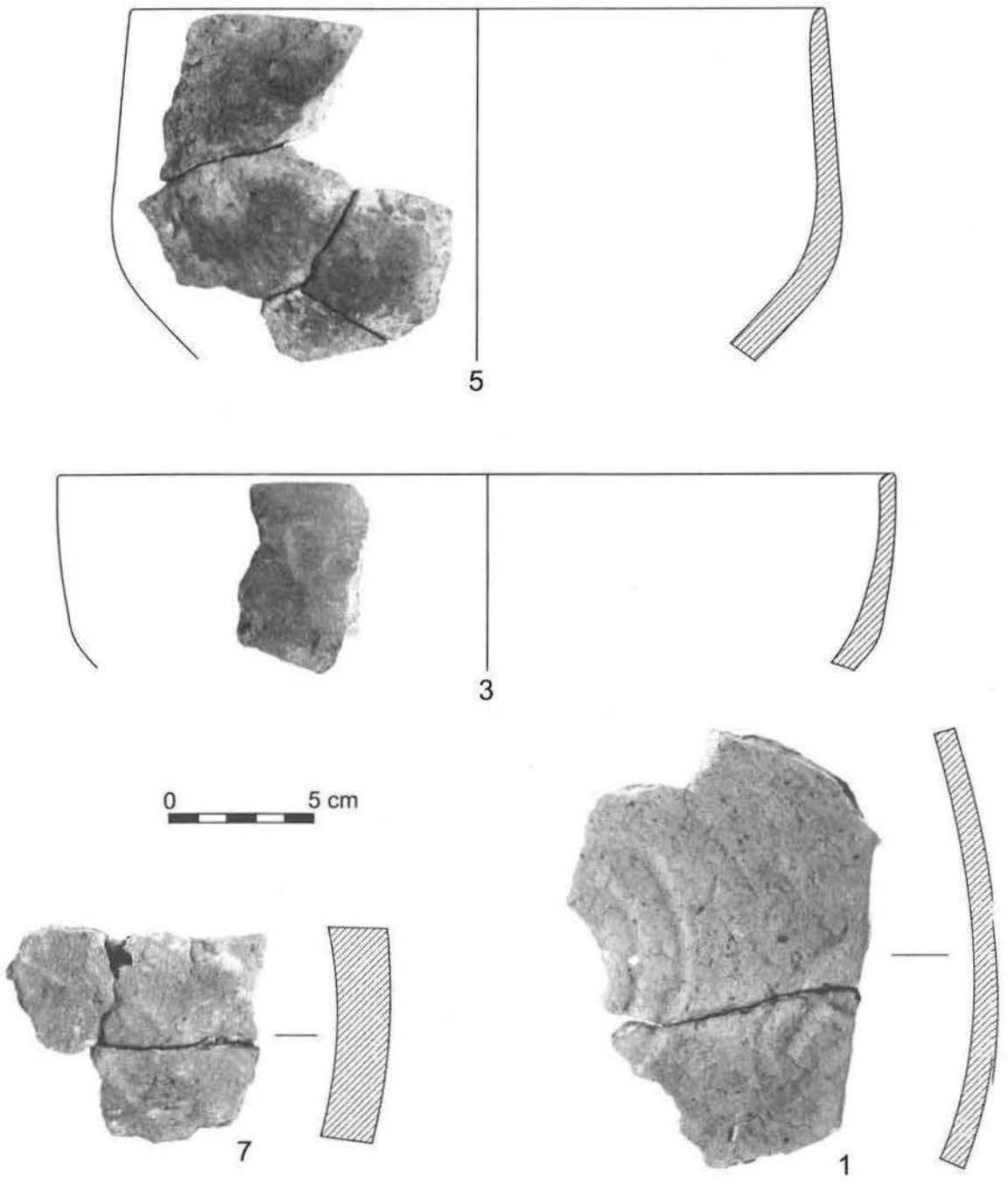


Fig. 107. Finds from Feature 22

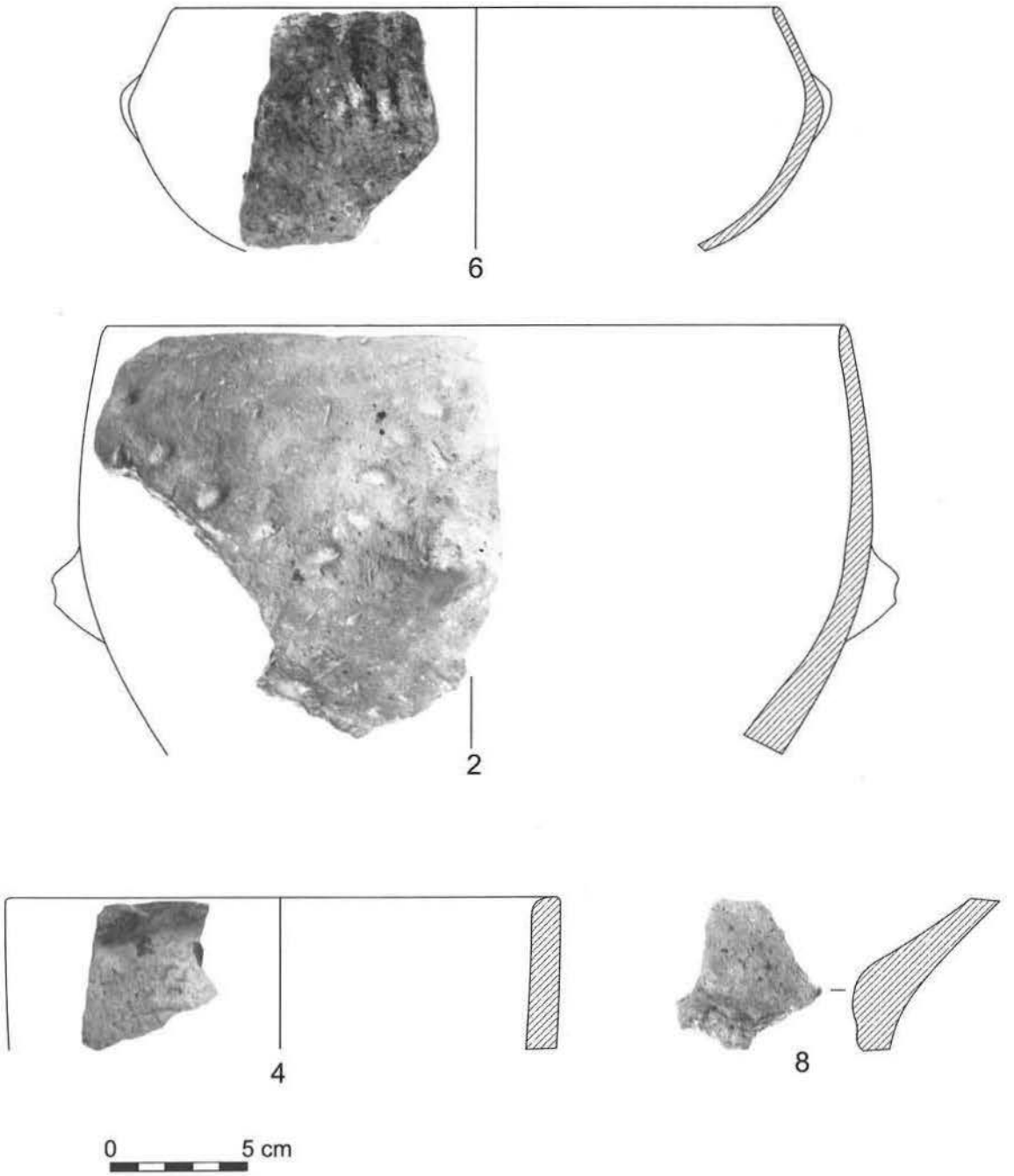


Fig. 108. Finds from Feature 22

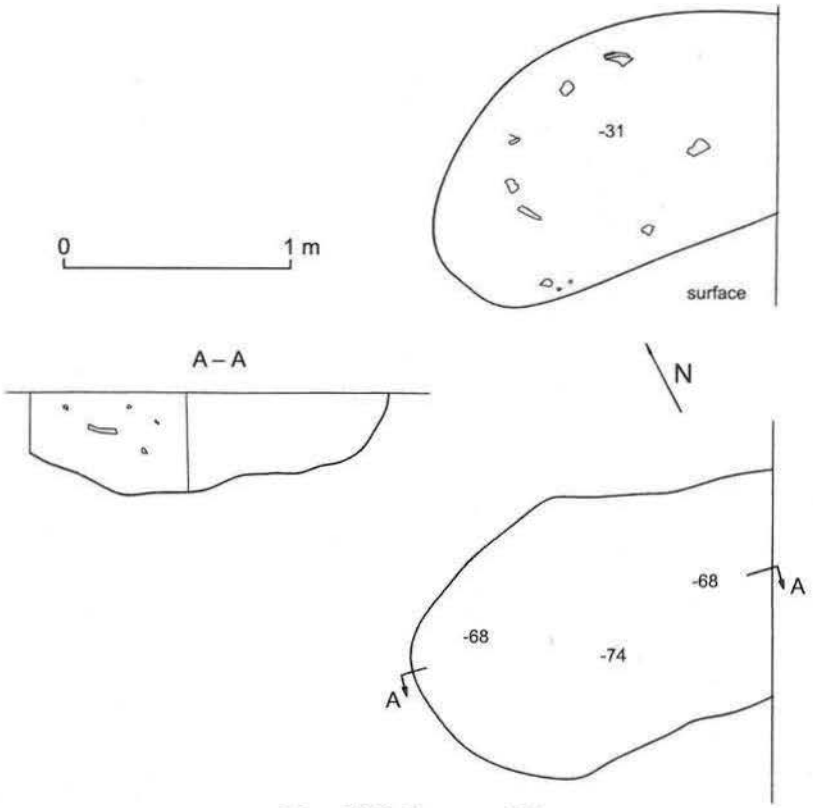


Fig. 109. Feature 24

9. Handle. Yellowish-grey, worn vessel handle, tempered with chaff and sand, decorated with a deep, vertical groove.
10. Lug. Yellowish-red, worn lug handle, tempered with chaff and sand, from a larger storage jar.
11. Fragment of a pedestalled vessel. Yellowish-red, tempered with chaff and sand, "sandwich" core, from the pedestal of a miniature pedestalled vessel. Base diam.: 4.5 cm.
12. Body fragment. Red, tempered with chaff and sand, "sandwich" core, from a poorly fired storage jar made from poorly levigated clay, decorated with a horizontally set bipartite knob. Wall th.: 0.8 cm.
13. Body fragment. Red, tempered with chaff and sand, "sandwich" core, decorated with finger-drawn barbotine. Wall th.: 1.8 cm.
14. Bowl (assembled from its fragments). Red, tempered with chaff and sand, from a fine, secondarily burnt and thus slightly amorphous, worn, biconical bowl, originally polished both on its exterior and interior. Rim diam.: 19 cm, base diam.: 10.5 cm, wall th.: 0.6–1.1 cm.

Feature 25 *(Fig. 113)*

North oriented, longish pit. The burnt debris layer was found at a depth of 32 cm. It floor lay at a depth of 56 cm; the greatest depth of the longish depression in the floor was 82 cm.

Finds[27] *(Fig. 114)*

A total of 241 pottery fragments were recovered from this pit.

1. Fragment of a pedestalled vessel. Red, tempered with chaff and sand, "sandwich" core, from the base of a poorly fired, biconical, pedestalled bowl made from finely levigated clay and polished both on its exterior and interior. Wall th.: 0.7–1.7 cm.

[27] Inv. no. 2000.108.1–4.

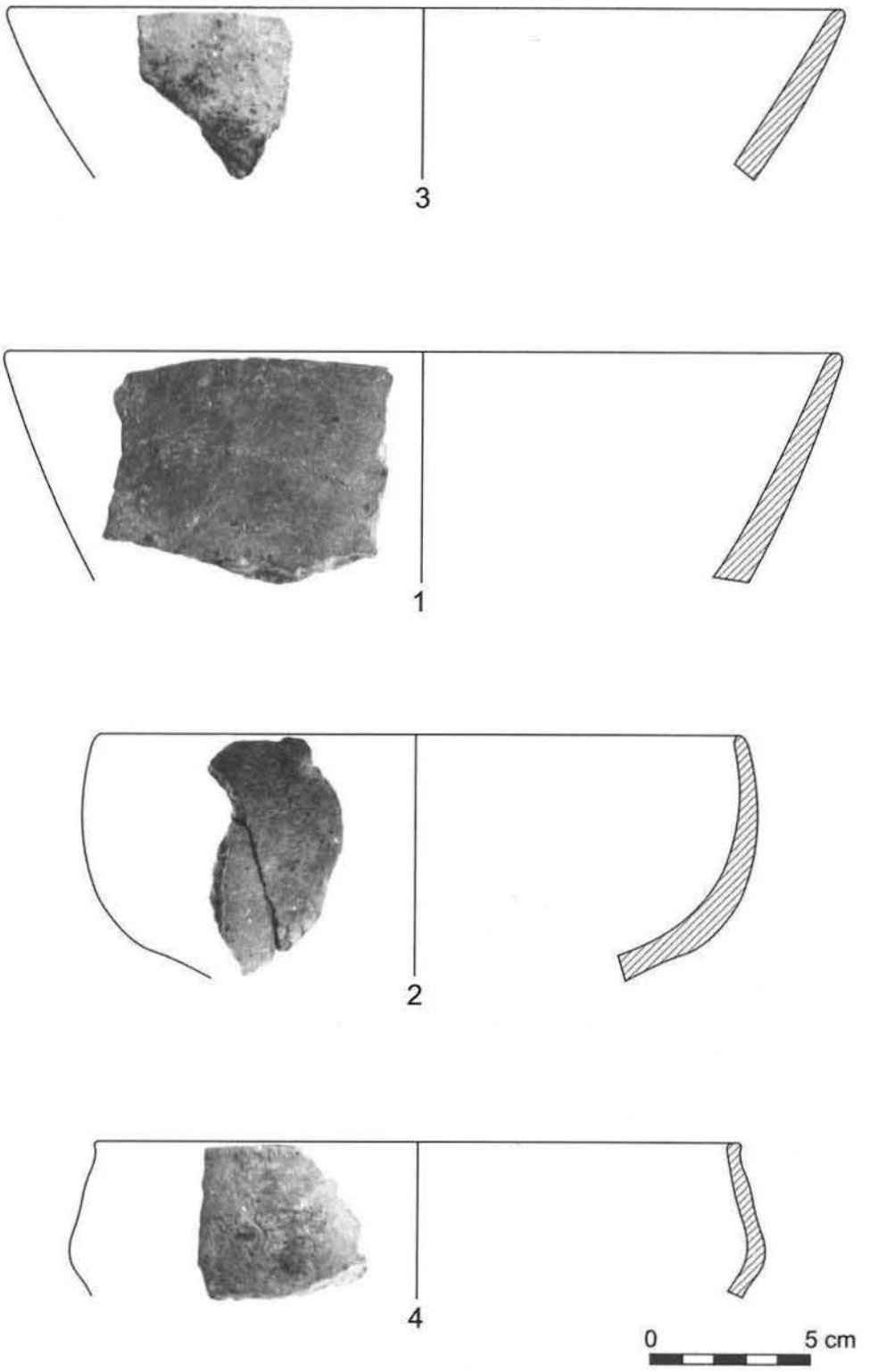


Fig. 110. Finds from Feature 24

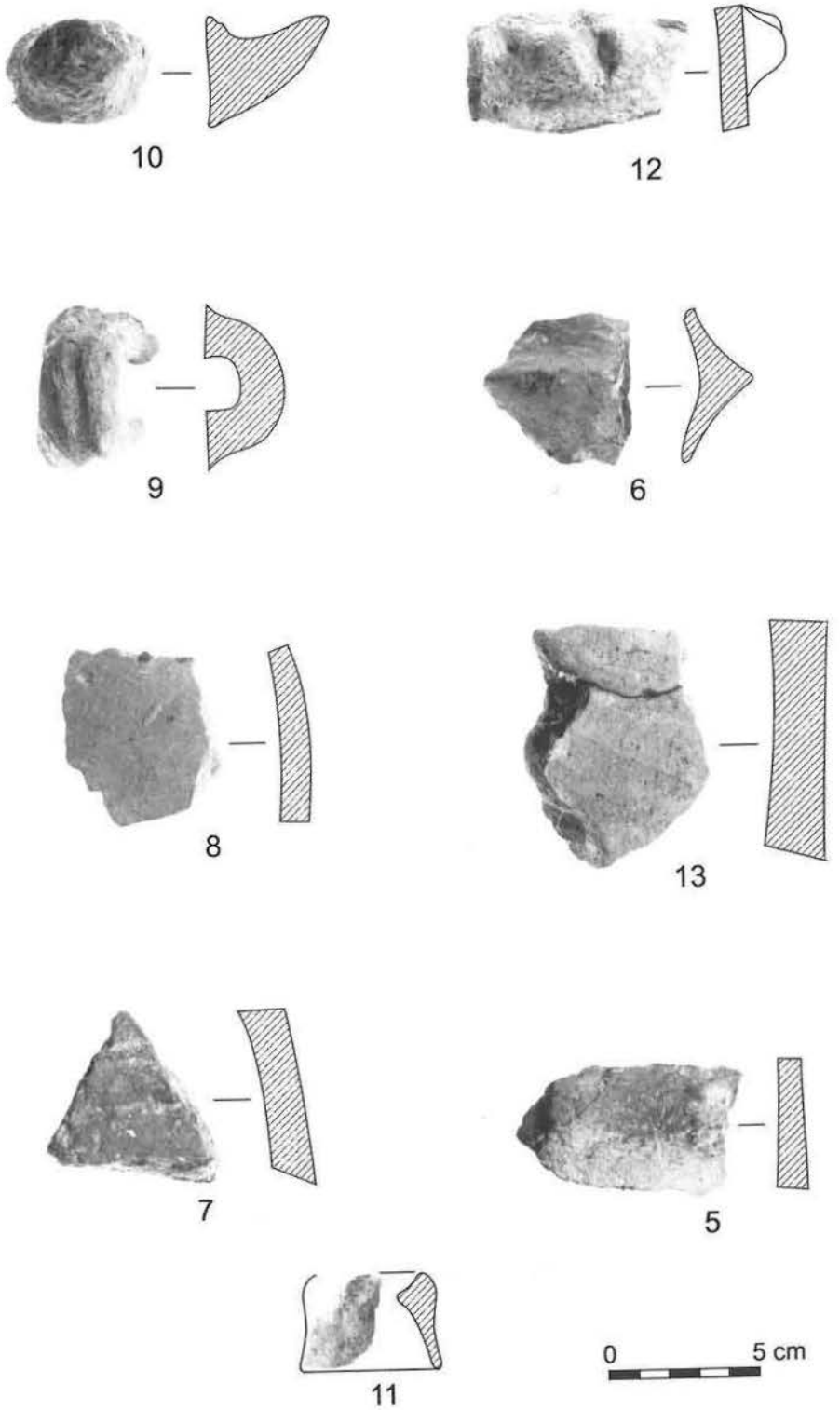
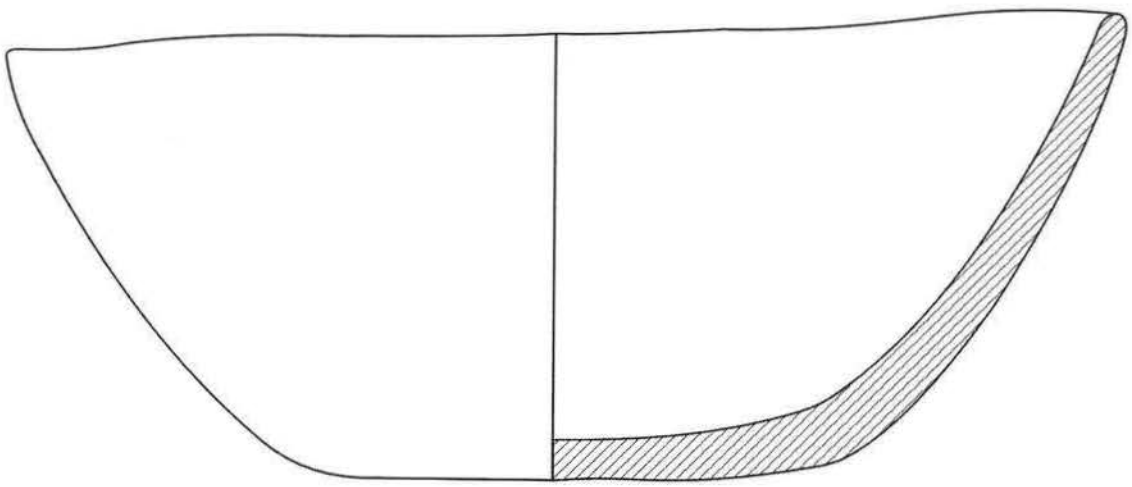


Fig. 111. Finds from Feature 24



14

Fig. 112. Bowl from Feature 24

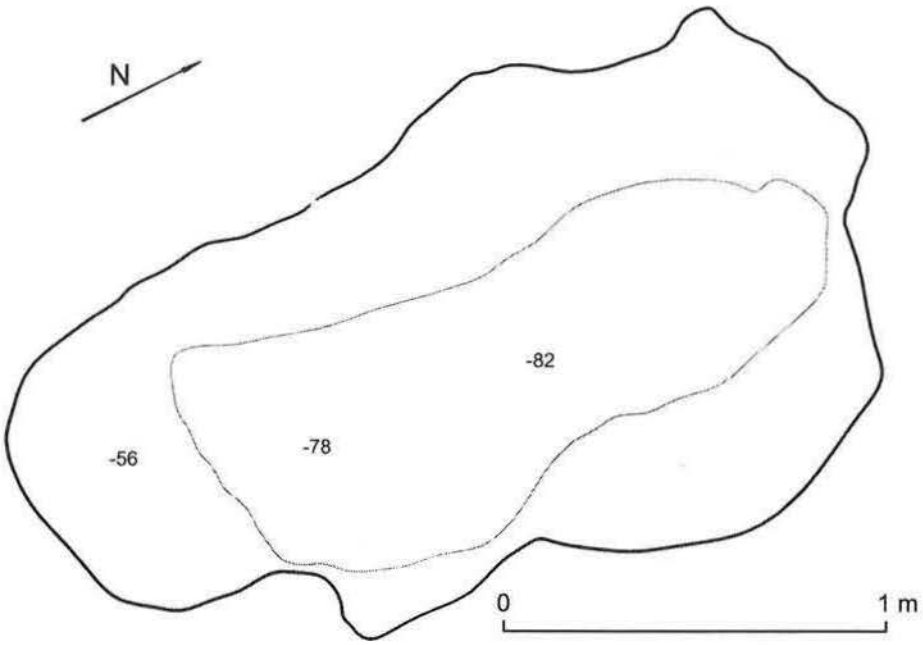


Fig. 113. Feature 25

2. Body fragment. Red and greyish-brown, tempered with chaff and sand, from a fine, small biconical bowl with incurving upper part, originally polished both on its exterior and interior, decorated with two tiny knobs on the carination. Wall th.: 0.1–0.4 cm.
3. Body fragment. Light red, tempered with chaff, "sandwich" core, from a poorly fired storage jar with a vertically set lug handle, made from poorly levigated clay. Wall th.: 1.2 cm.
4. Body fragment with handle. Dark grey exterior, red interior, tempered with chaff and sand, from a poorly fired storage jar with a horizontally set loop handle, made from poorly levigated clay. Wall th.: 1.2–2.0 cm.

Feature 26 *(Fig. 115)*

A more or less north oriented longish pit. Large pottery fragments were recovered from the burnt debris. Its greatest depth was 53 cm. The pit deepened gradually, although slightly more steeply in the middle, but this could hardly be called a ledge.

Finds[28] *(Fig. 116)*

A total of 156 pottery fragments and some chipped stone implements were recovered from this feature.

1. Base fragment. Reddish-grey, mottled, tempered with chaff and sand, from a strongly worn smaller storage jar. Base diam.: 7.5 cm, wall th.: 0.7–1 cm.
2. Base fragment. Bright red, tempered with chaff and sand, from the base of a perhaps secondarily burnt, large, porous storage jar. Base diam.: 22 cm, wall th.: 0.8–1.3 cm.

Feature 27 *(Fig. 117)*

North oriented, long, narrow, deep pit, the longest and widest pit uncovered on the Pityerdomb settlement. Its length was almost 7 m. The pit widened slightly towards the two ends, where its

[28] Inv. no. 2000.106.1–2.

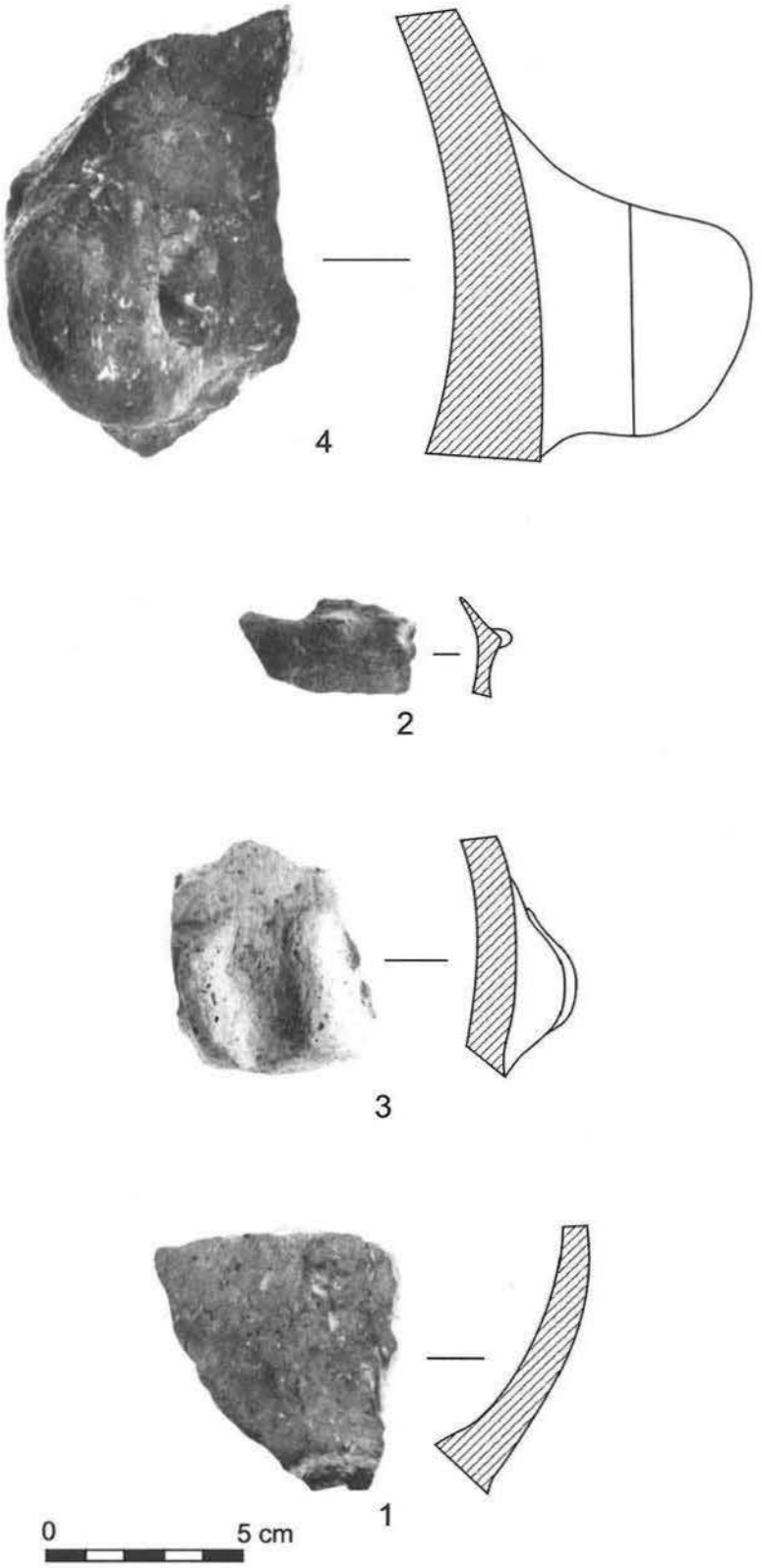


Fig. 114. Finds from Feature 25

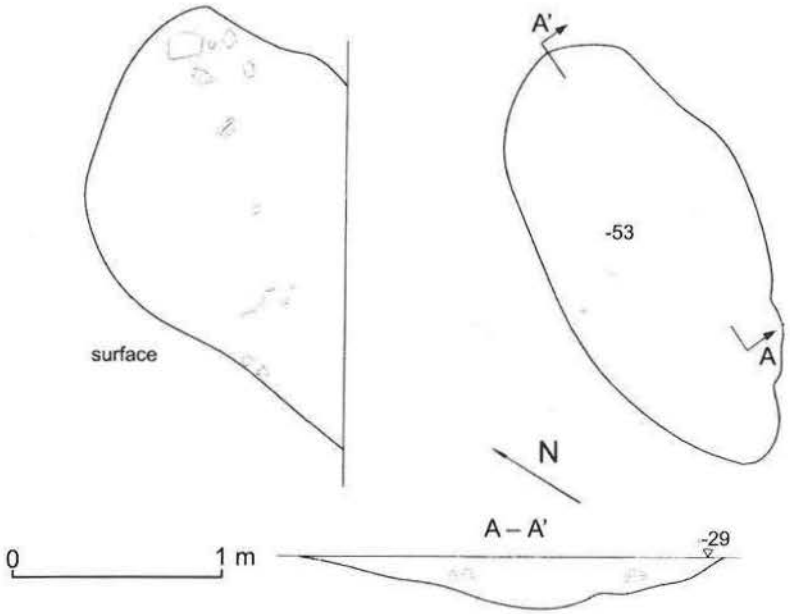


Fig. 115. Feature 26

average width was 130–140 cm and 155–165 cm resp. The burnt debris layer, containing many strongly burnt daub fragments, was first noted at a depth of 35–38 cm. The earth around the debris was also burnt. The discoloured patch of the feature was larger than the actual pit. The burnt debris layer contained an abundance of finds. The burnt rubble under the debris layer contained the imprints of large timber fragments. A narrow trench ran along the middle of the pit. This trench resembled Features 9 and 1 in Trench I, not only owing to its depth, but also because it contained a number of posthole-like intrusions that could be distinguished by their lobed form and by their depth. The average depth by the side of the pit ranged between 83–92 cm, and between 104–113 cm in the trench, reaching a depth of 120–127 cm in the middle. An over half meter long burnt wall fragment was found *in situ* during the clearing of the pit.

Finds[29] *(Figs 118–123)*

A total of 1003 pottery fragments, some stone implements and several burnt daub fragments (12.5 kg) were recovered from this feature.

1. Rim and body fragment. Red, tempered with chaff and sand, from the shoulder of a porous storage jar with inturned rim. The belly was globular and the vessel had perhaps been secondarily burnt. Rim diam.: 30 cm, wall th.: 0.7–1.0 cm.
2. Body fragment. Reddish-grey, mottled, tempered with chaff, from the shoulder of a large, poorly fired, porous storage jar made from poorly levigated clay, decorated with a row of finger impressions above the shoulder. Wall th.: 1.2–1.3 cm.
3. Body fragment. Red and smoky brownish-grey, tempered with chaff and sand, from a poorly fired, worn globular vessel made from poorly levigated clay. Wall th.: 0.8 cm.
4. Body fragment. Red, tempered with chaff and sand, "sandwich" core, from a poorly fired, large storage jar made from poorly levigated clay. Wall th.: 1.4 cm.
5. Body fragment. Red, tempered with chaff and sand, from a well-fired, biconical vessel with incurving upper part made from finely levigated clay, decorated with a finger impressed flat knob on the carination. Wall th.: 0.7–1.3 cm.

[29] Inv. no. 2000.98.1–23; 2000.104.1–29.

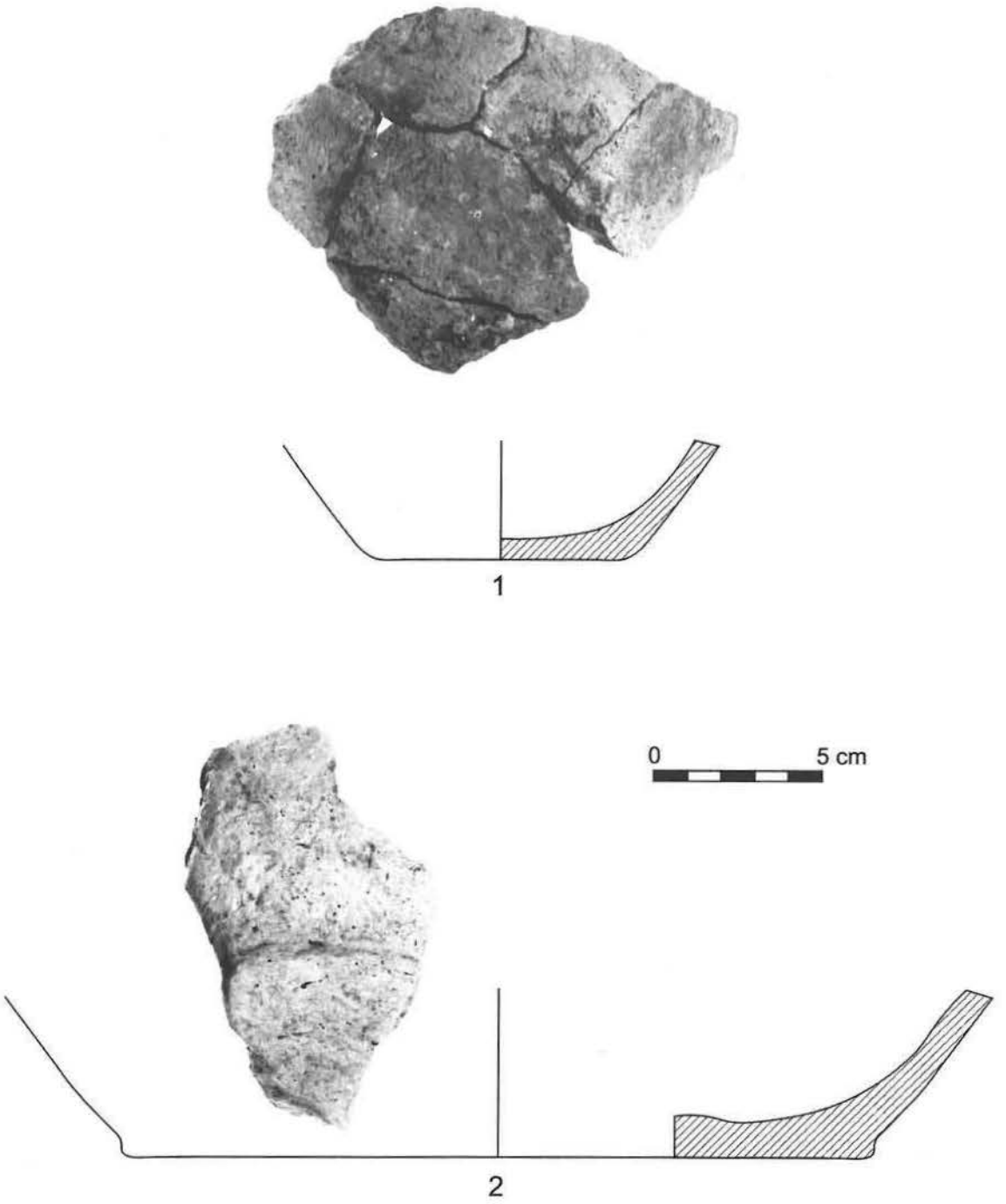


Fig. 116. Finds from Feature 26

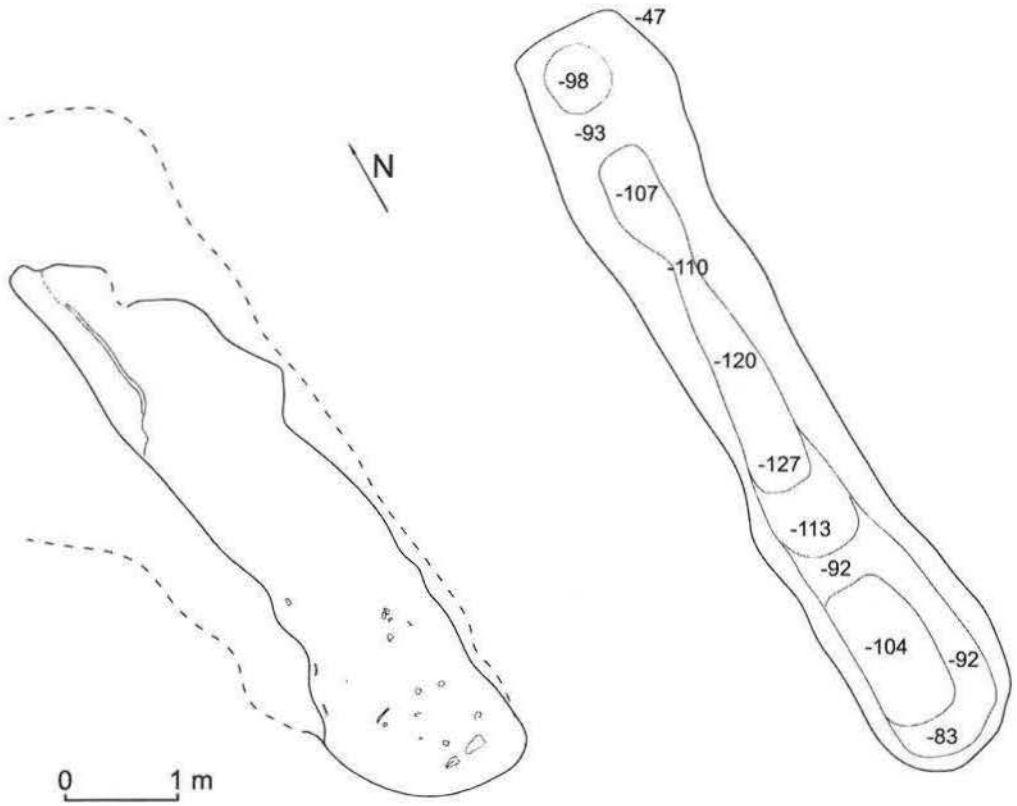


Fig. 117. Feature 27

6. Body fragment. Red, tempered with chaff, sand and crushed pottery, from a poorly fired, large storage jar made from poorly levigated clay, originally covered with a slip that has since worn off. Wall th.: 1.1–1.5 cm.
7. Rim fragment. Red, tempered with chaff and sand, from a fine globular bowl covered with a polished, dark red slip both on its exterior and interior. Rim diam.: 23 cm, wall th.: 0.4–0.9 cm.
8. Base fragment. Light red and cream, tempered with chaff and sand, from a poorly fired vessel with globular base made from poorly levigated clay, decorated with a lightly incised rectangular linear pattern. Base diam.: 6 cm, wall th.: 0.8–1.0 cm.
9. Rim fragment. Red, tempered with chaff and sand, from a well-fired, biconical bowl made from finely levigated clay and covered with a polished, dark red slip both on its exterior and interior. The carination is light and the upper part of the bowl is almost cylindrical. Rim diam.: 29 cm, wall th.: 0.4–0.8 cm.
10. Body fragment. Red, from a poorly fired, perhaps secondarily burnt storage jar made from poorly levigated clay and decorated with two wide, lightly incised lines. Wall th.: 0.8–1.1 cm.
11. Body fragment. Light cream, tempered with chaff and sand, from a smaller, thin-walled vessel, decorated with deeply incised, not quite parallel lines. Wall th.: 0.4–0.5 cm.
12. Rim fragment. Light red, tempered with chaff and sand, from a well-fired, thin-walled mug with slightly outturned rim made from finely levigated clay. Rim diam.: 16 cm, wall th.: 0.3–0.6 cm.
13. Body fragment. Red, "sandwich" core, from the shoulder of a poorly fired, thick-walled, large, porous storage jar made from poorly levigated clay, decorated with a large, finger impressed knob. Wall th.: 1.1–1.2 cm.
14. Body fragment. Red, tempered with chaff and sand, from a poorly made, thick-walled storage jar, decorated with a finger impressed rib and a finger impressed knob. Wall th.: 0.8–1.3 cm.
15. Body fragment. Red, tempered with chaff and sand, from the shoulder of a poorly fired, smaller storage jar made from finely levigated clay, decorated with a finger impressed rib. Wall th.: 1 cm.

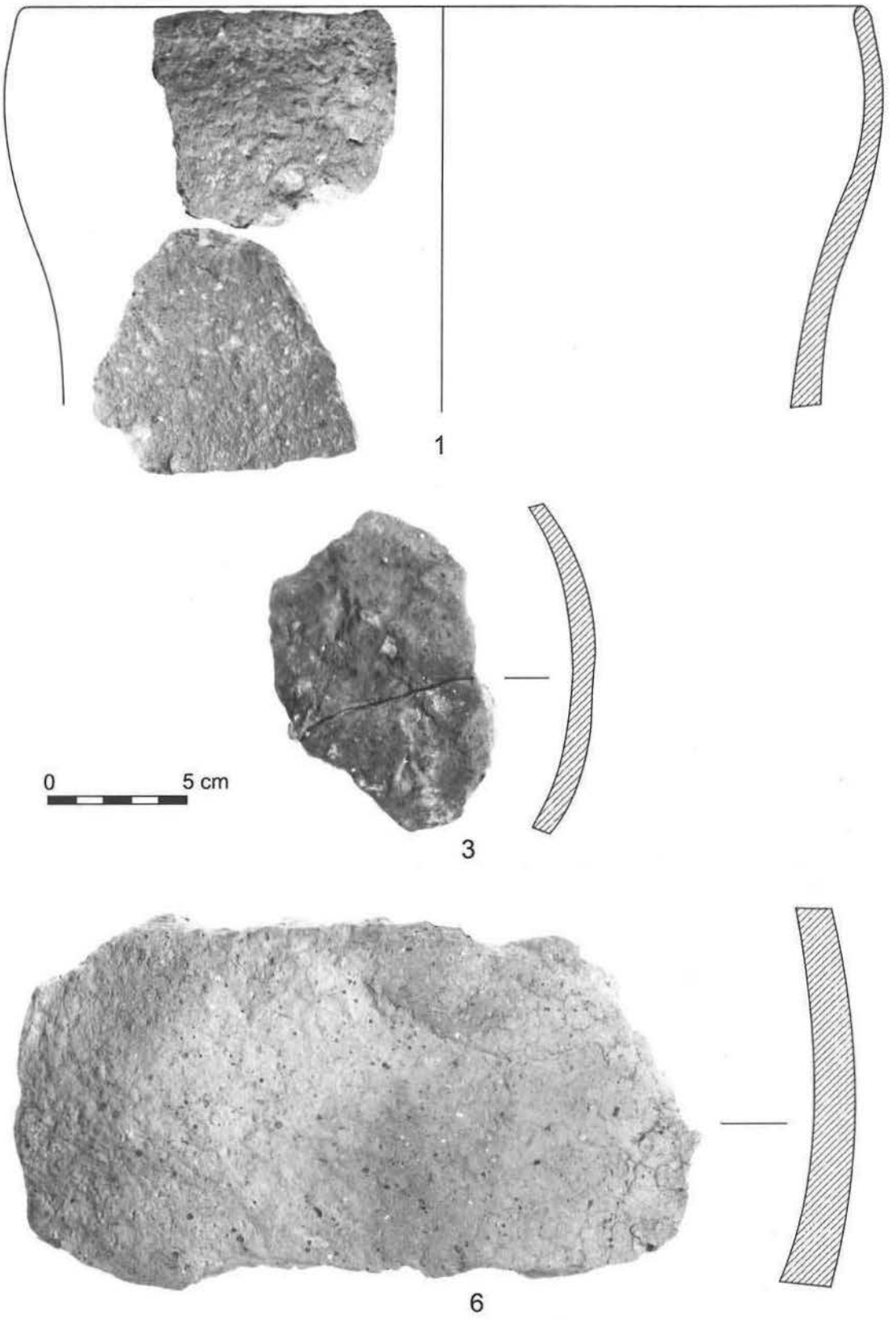


Fig. 118. Finds from Feature 27

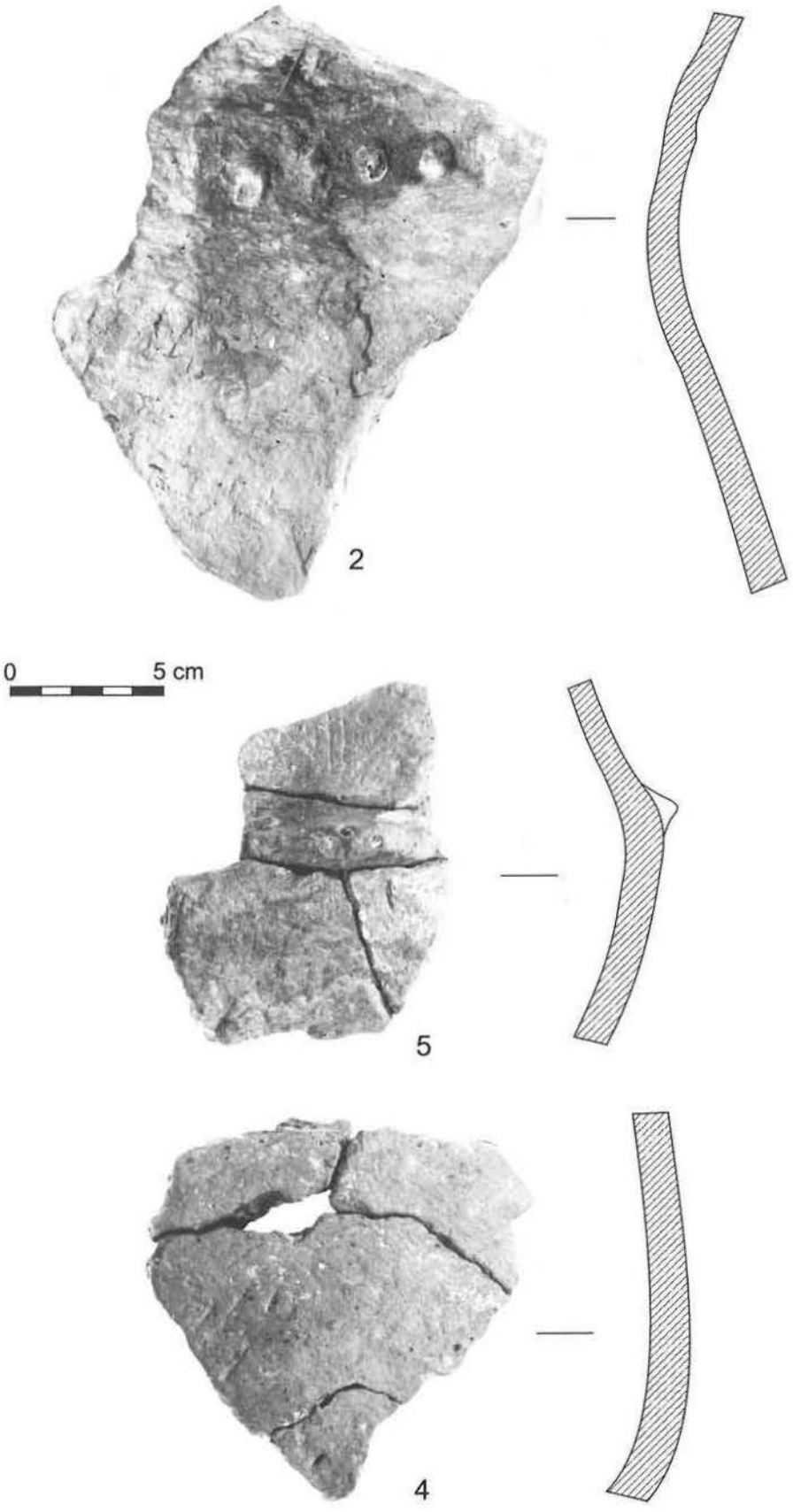


Fig. 119. Finds from Feature 27

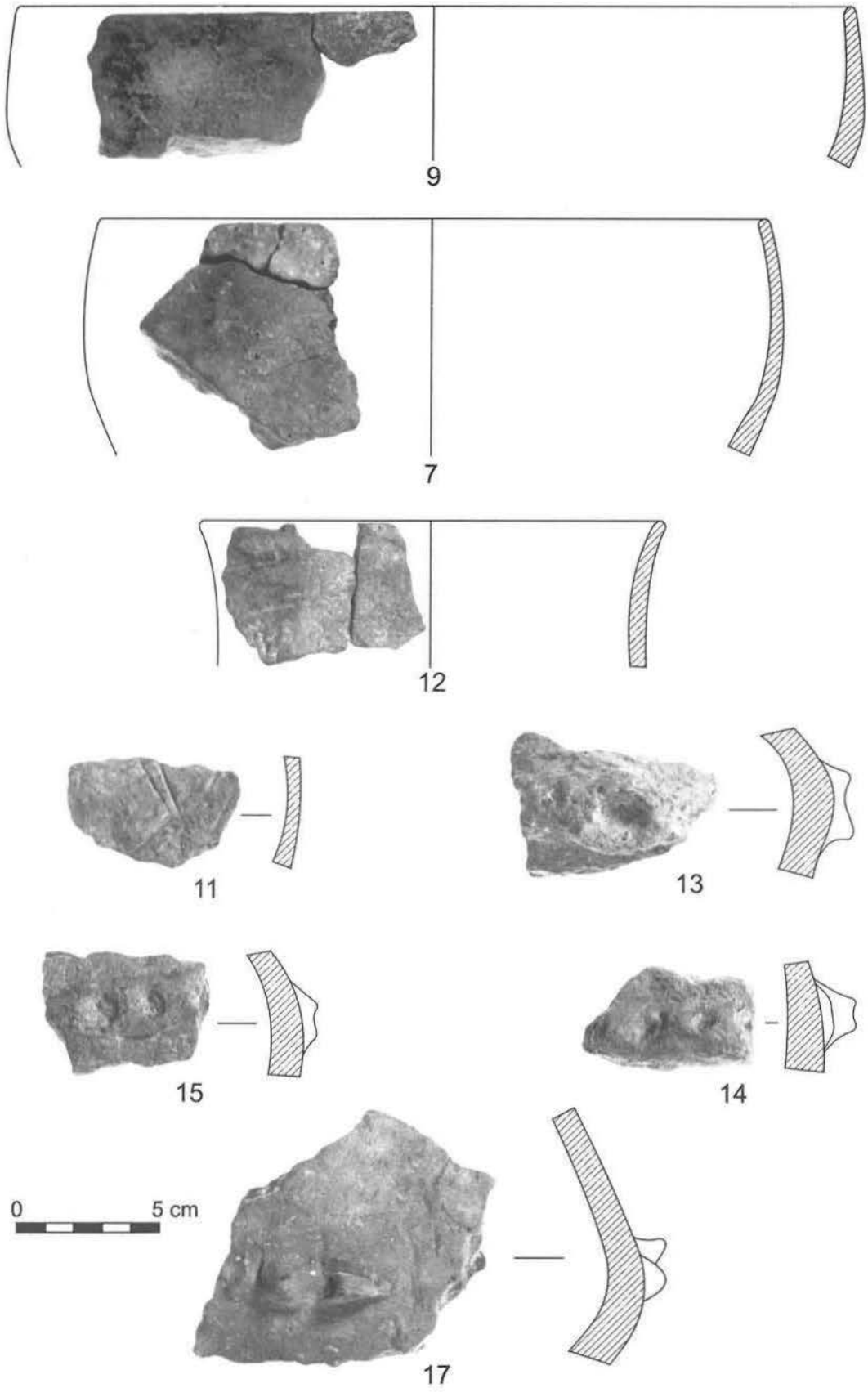


Fig. 120. Finds from Feature 27

16. Base fragment. Red, tempered with chaff, from the base of a poorly fired, worn storage jar made from poorly levigated clay, decorated with a wide line, setting out from the base. Base diam.: 11 cm, wall th.: 0.8–1.4 cm.
17. Body fragment. Red, tempered with chaff and sand, from the belly of a poorly fired, globular vessel made from finely levigated clay, decorated with a small, pointed knob. Wall th.: 0.8–1.1 cm.
18. Base fragment. Red, tempered with chaff and sand, "sandwich" core, from a poorly fired bowl made from poorly levigated clay. Base diam.: 12 cm, wall th.: 0.6–1.1 cm.
19. Base and body fragment. Red and smoky grey, tempered with chaff and sand, from a poorly fired, small cup made from poorly levigated clay, decorated with three small parallel lines. Base diam.: 6 cm, wall th.: 0.5–1.1 cm.
20. Fragment of a pedestalled vessel. Red, tempered with chaff and sand, from a small, poorly fired pedestalled vessel made from poorly levigated clay, with the juncture of the pedestal to the vessel. Juncture diam.: 2.5 cm, wall th.: 0.6–1.9 cm.
21. Fragment of a pedestalled vessel. Light red, tempered with chaff and sand, from the juncture of the pedestal to the bowl. Wall th.: 0.4–1.0 cm.
22. Rim fragment. Light red, tempered with chaff and sand, from a poorly fired, thin-walled miniature flask with outturned rim, made from poorly levigated clay. Rim diam.: 8 cm, Wall th.: 0.4–0.5 cm.
23. Rim fragment. Red, tempered with chaff and sand, from a well-fired, porous, S-profiled, small vessel made from finely levigated clay, originally with polished surface, but now worn. Wall th.: 0.4 cm.
24. Rim fragment. Red, tempered with chaff and sand, from a poorly fired, strongly biconical miniature vessel made from poorly levigated clay. The vessel is incurving above the carination. Rim diam.: 5 cm, wall th.: 0.2–1.1 cm.
25. Knob. Round, pointed knob from a red, poorly fired, porous storage jar made from poorly levigated clay, tempered with chaff and sand, with a "sandwich" core. Wall th.: 0.8 cm.
26. Knob. Light red, finger impressed, oval knob from a light red storage jar tempered with chaff and sand. Wall th.: 0.9 cm.
27. Body fragment. Red, tempered with chaff and sand, from a poorly fired, biconical miniature vessel made from poorly levigated clay. Wall th.: 0.5 cm.
28. Knob. Angular knob, from a poorly fired, worn storage jar made from poorly levigated clay, tempered with chaff and sand. Wall th.: 0.8 cm.
29. Knob. Upward pointing knob from a red, poorly fired, worn storage jar made from poorly levigated clay, tempered with chaff and sand.
30. Lug. Red, porous, vertically bipartite lug handle tempered with chaff and sand. Wall th.: 1.0 cm.
31. Lug. Red, porous, vertically bipartite lug handle tempered with chaff and sand, from a storage jar.
32. Fragment of a pedestalled vessel. Red, tempered with chaff and sand, "sandwich" core, from a poorly fired, low, conical pedestal made from finely levigated clay. Base diam.: 10 cm, wall th.: 0.6–0.8 cm.
33. Body fragment. Light red, tempered with chaff and sand, from the shoulder of a poorly fired, porous, worn biconical vessel made from poorly levigated clay, decorated with a finger impressed flat knob. Wall th.: 0.7 cm.
34. Handle. Red handle, from a poorly fired, worn storage jar made from poorly levigated clay, tempered with chaff and sand.
35. Body fragment with handle. Dark red, tempered with chaff and sand, from a poorly fired, porous, large storage jar with a vertically set handle, made from poorly levigated clay and a row of finger impression above and under the handle. Wall th.: 1.1–1.8 cm.
36. Body fragment with handle. Grey and cream mottled, "sandwich" core, from a poorly fired, larger storage jar made from poorly levigated clay with a vertically set handle. Wall th.: 1.1–1.8 cm.
37. Handle. Light red handle, from a poorly fired storage jar made from poorly levigated clay, tempered with chaff and sand. The handle was set vertically, the juncture is conical.

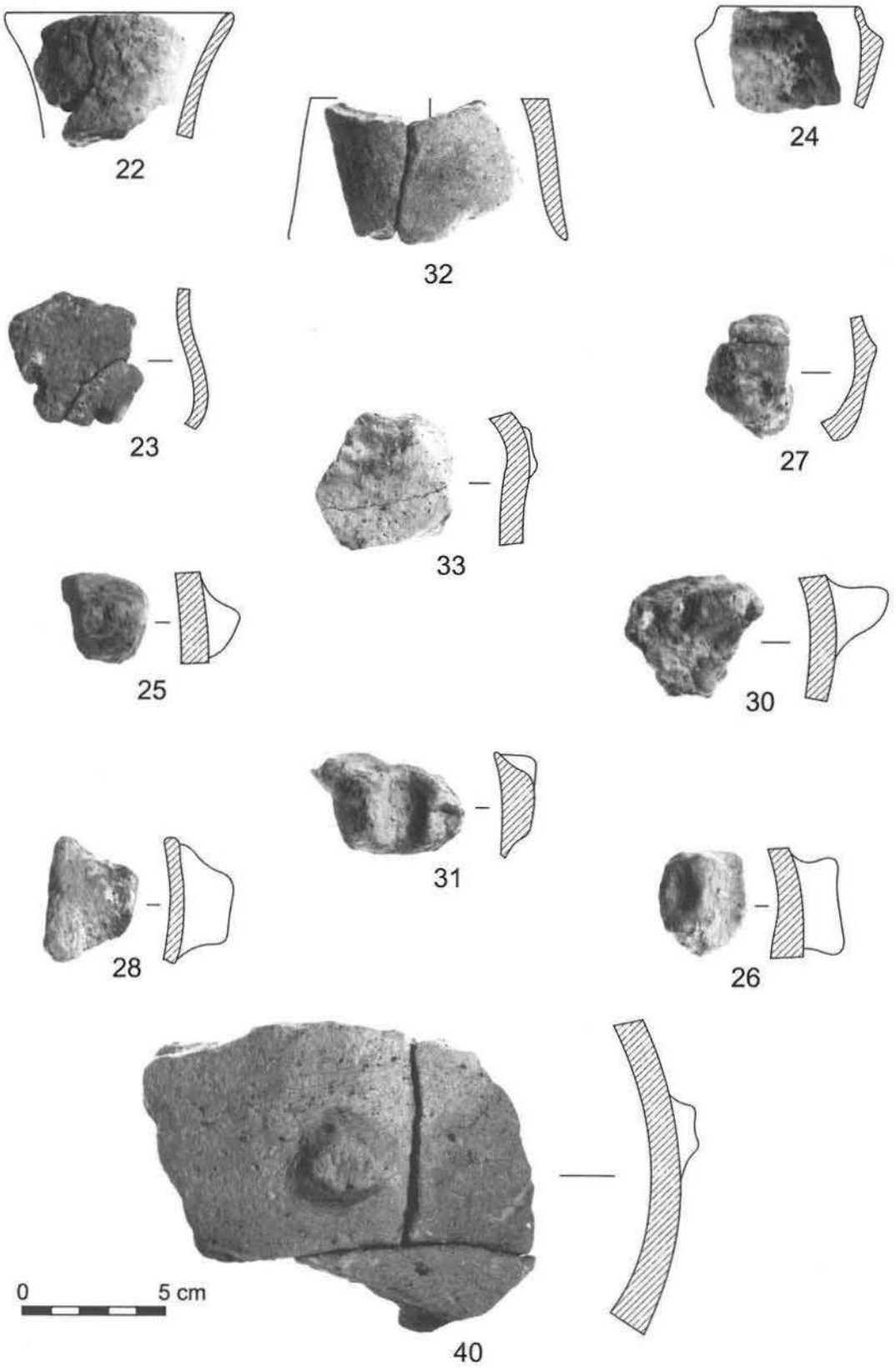


Fig. 121. Finds from Feature 27

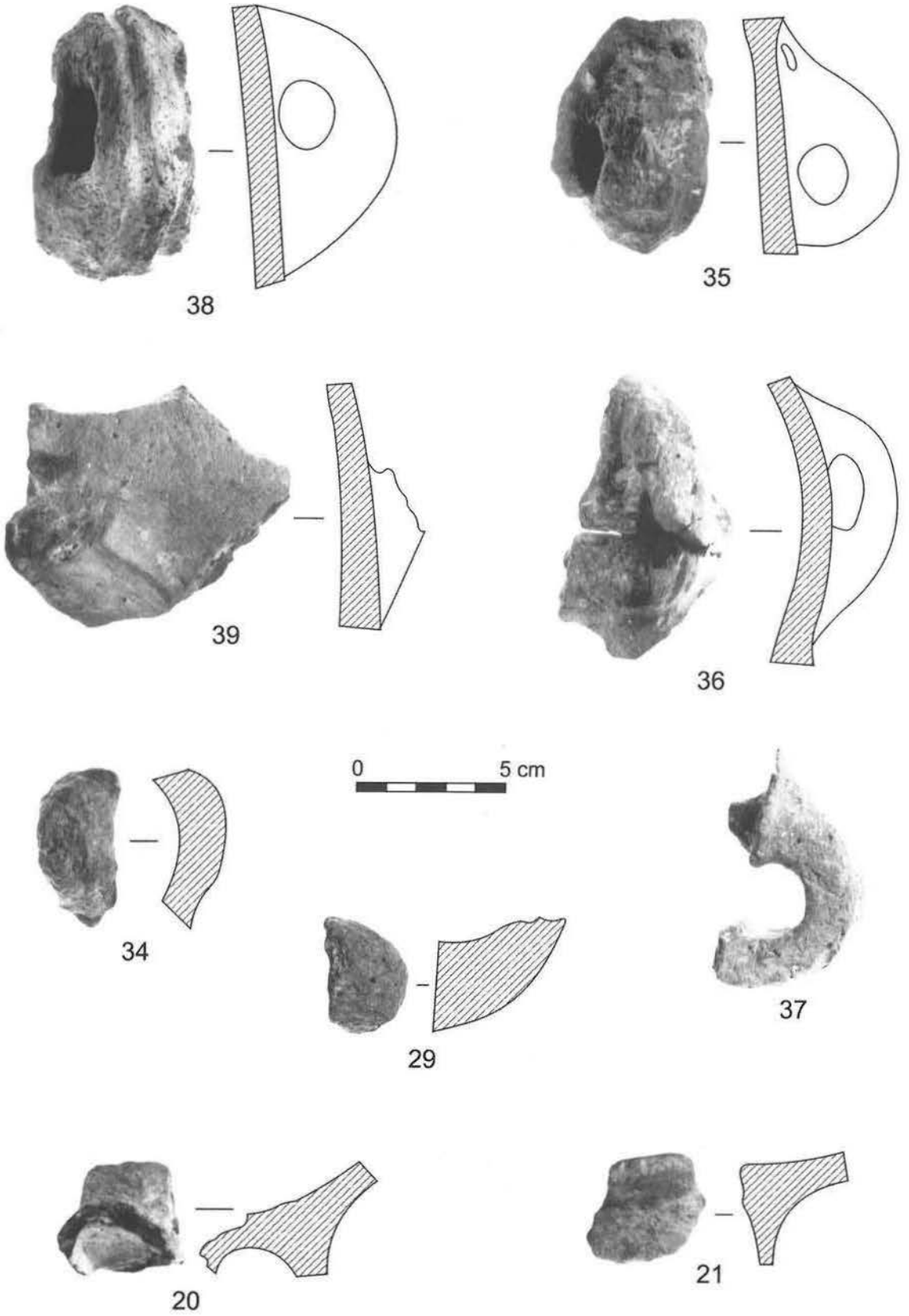


Fig. 122. Finds from Feature 27

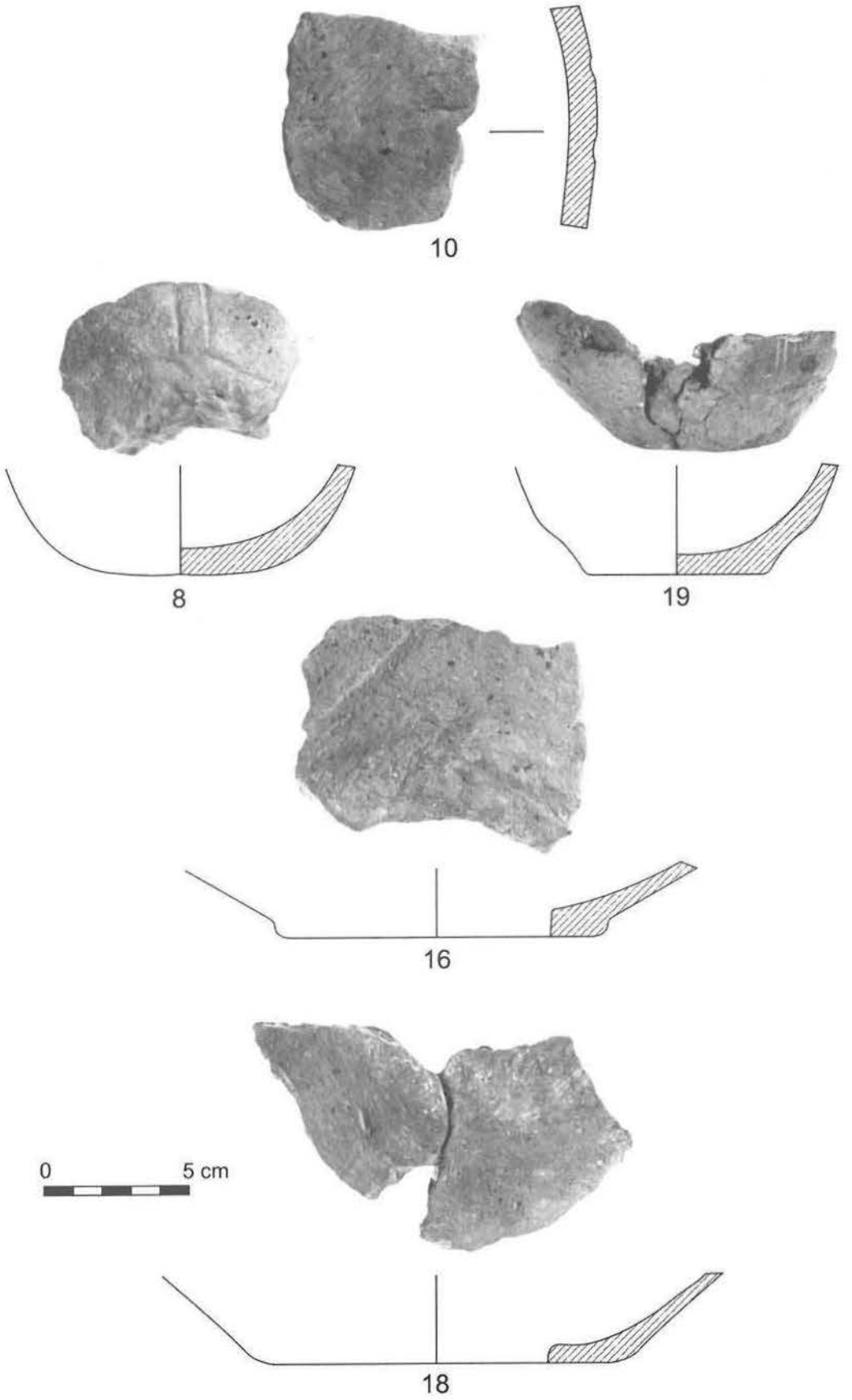


Fig. 123. Finds from Feature 27

38. Body fragment with handle. Light red handle with double, vertical ribbing, from a poorly fired, worn, large storage jar made from poorly levigated clay, tempered with chaff and sand, with a "sandwich" core. Wall th.: 1.0 cm.
39. Body fragment. Red, tempered with chaff and sand, "sandwich" core, from a poorly fired, large storage jar with the stub of a vertically set handle made from finely levigated clay. The handle is decorated with vertical, wide ribbing. Wall th.: 1.0–1.6 cm.
40. Body fragment. Red, tempered with chaff and sand, "sandwich" core, from a poorly fired, globular storage jar made from finely levigated clay, decorated with a finger impressed knob. Wall th.: 1.2–1.6 cm.

Feature 28

It seems unlikely that this feature can be associated with the Linear Pottery settlement, although it must be noted that it lay between Features 20 and 29, i.e. inside House 2. The feature itself was a small hearth with a strongly burnt debris. It did not contain any finds, except for a fine, polished stone axe and a few tiny pottery sherds in a disturbed, secondary position. It lay higher than the other features of the settlement (at a depth of 18 cm) and the burnt baking plate too lay higher than the occupation surface of House 2. A few stray Copper Age vessel fragments and a clay ladle with perforated handle was recovered from Trench II. It is therefore possible that Feature 28 was part of the briefly occupied Balaton–Lasinja settlement, established some one and a half thousand years after the abandonment of the Linear Pottery hamlet.

Feature 29 *(Fig. 124)*

North oriented, longish pit with a longish depression in its middle. The burnt debris was first noted at a depth of 33 cm. The large, often secondarily burnt pottery sherds and chipped stone implements were almost completely covered by this debris. The pit had a uniform fill. In addition to the pottery sherds lying on top of the pit, a number of conjoinable fragments lay obliquely in the pit. Some vessels apparently broke after they had fallen into the pit. Traces of strong burning were noted in the northern part of the pit, as well as in the deeper lying parts. The clay had burnt to a light red colour over about one-quarter of the pit. Large chunks of charcoal lay in this part and in part under the burnt clay owing to the obliqueness of the wall. The greatest depth was measured in the depression (85 and 97 cm, resp.), the average depth being 66–72 cm in other parts of the pit.

Finds[30] *(Figs 125–127)*

A total of 411 pottery fragments and some chipped stone implements were recovered from this feature.

1. Rim fragment. Dark red, tempered with chaff and sand, from the shoulder of a well-fired bin made from finely levigated clay. It is relatively thin-walled compared to its size. Rim diam.: 41 cm, wall th.: 0.9 cm.
2. Spout or ladle. Light red and greyish spout or ladle, tempered with chaff and sand (the tempering agents indicate that it cannot be from a later period).
3. Fragment of a pedestalled vessel. Light red and grey, tempered with chaff and sand, from an extremely badly preserved, worn, slightly flaring, conical pedestal. Base diam.: 8 cm, wall th.: 0.5–0.8 cm.
4. Rim and body fragment. Bright red, "sandwich" core, from a well-fired, globular, bomb shaped vessel with inturned rim, made from finely levigated clay and covered with a polished, dark red slip both on its exterior and interior. Rim diam.: 14 cm, wall th.: 0.4–1.1 cm.
5. Rim fragment. Red, tempered with chaff, sand and crushed pottery, from a large, well-fired storage jar with straight cut rim made from finely levigated clay. Rim diam.: 28 cm, wall th.: 0.5–1.2 cm.

[30] Inv. no. 2000.100.1–25; 2000.110.1–13.

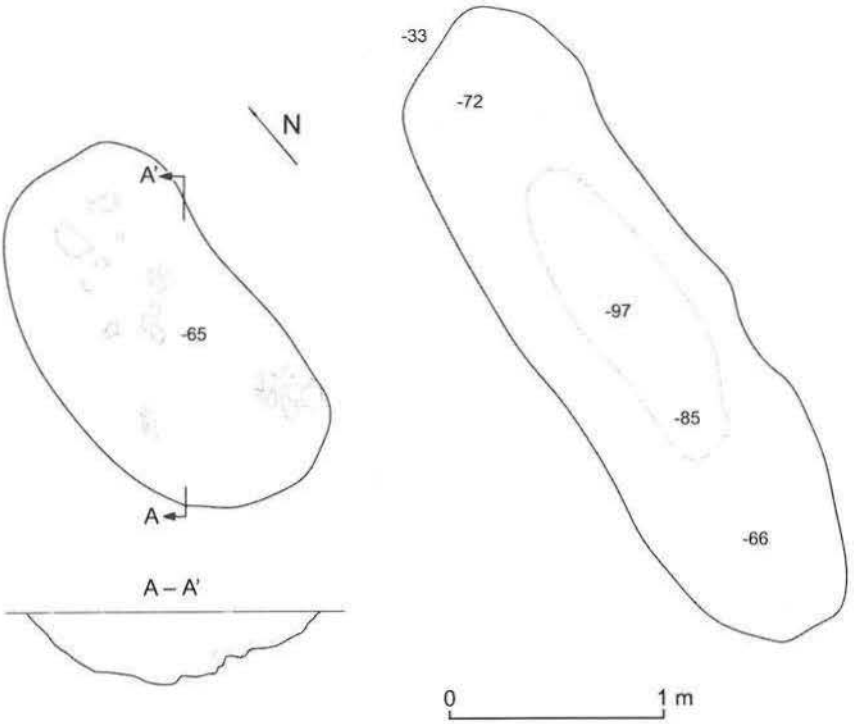


Fig. 124. Feature 29

6. Rim fragment. Red, tempered with chaff and sand, from a storage jar with slightly everted rim made from finely levigated clay. Rim diam.: 38 cm, wall th.: 1.0 cm.
7. Rim and body fragment. Red and smoky greyish-brown, mottled, tempered with chaff and sand, from a flaring, chalice shaped bowl. Rim diam.: 14 cm, wall th.: 0.4–1.2 cm.
8. Body fragment. Red, tempered with chaff and sand, "sandwich" core, from a thick-walled storage jar, decorated with a bipartite knob and an oblique row of pinched decoration. Wall th.: 1.1 cm.
10. Rim fragment. Red, tempered with chaff and sand, from a funnel mouthed storage jar. It is relatively thin-walled compared to its size. Wall th.: 0.5–0.7 cm.
11. Body fragment. Red, tempered with chaff and sand, "sandwich" core, from a poorly fired, globular storage jar made from poorly levigated clay, decorated with a large, bipartite knob. Wall th.: 0.6–0.8 cm.
12. Rim and body fragment. Dark red, from a fine, well-fired, biconical bowl made from finely levigated clay, covered with a polished, dark red slip both on its exterior and interior. Rim diam.: 23 cm, wall th.: 0.3–0.6 cm.
13. Body fragment. Red, tempered with chaff and sand, "sandwich" core, from a well-fired, thick-walled, biconical vessel made from finely levigated clay and decorated with a rib with two rows of oblique grooves. Wall th.: 1.0–1.5 cm.

Feature 30 *(Fig. 128)*

A flat, slightly rectangular feature lying between Features 27 and 21. The burnt debris, mixed with organic material and burnt daub fragments, was first noted at a depth of 35 cm. The earth was burnt in many spots and it yielded countless pottery sherds and chipped stone implements. The greater part of the finds lay in a horizontal position at this depth on a greyish, stamped level that can most likely be interpreted as an occupation level. A distinct ashy patch was noted inside the feature. The average depth was 75 cm; a round depression with a diameter of 60 cm and a depth of 86 cm was noted in the southern part of the pit, perhaps for holding a storage jar.

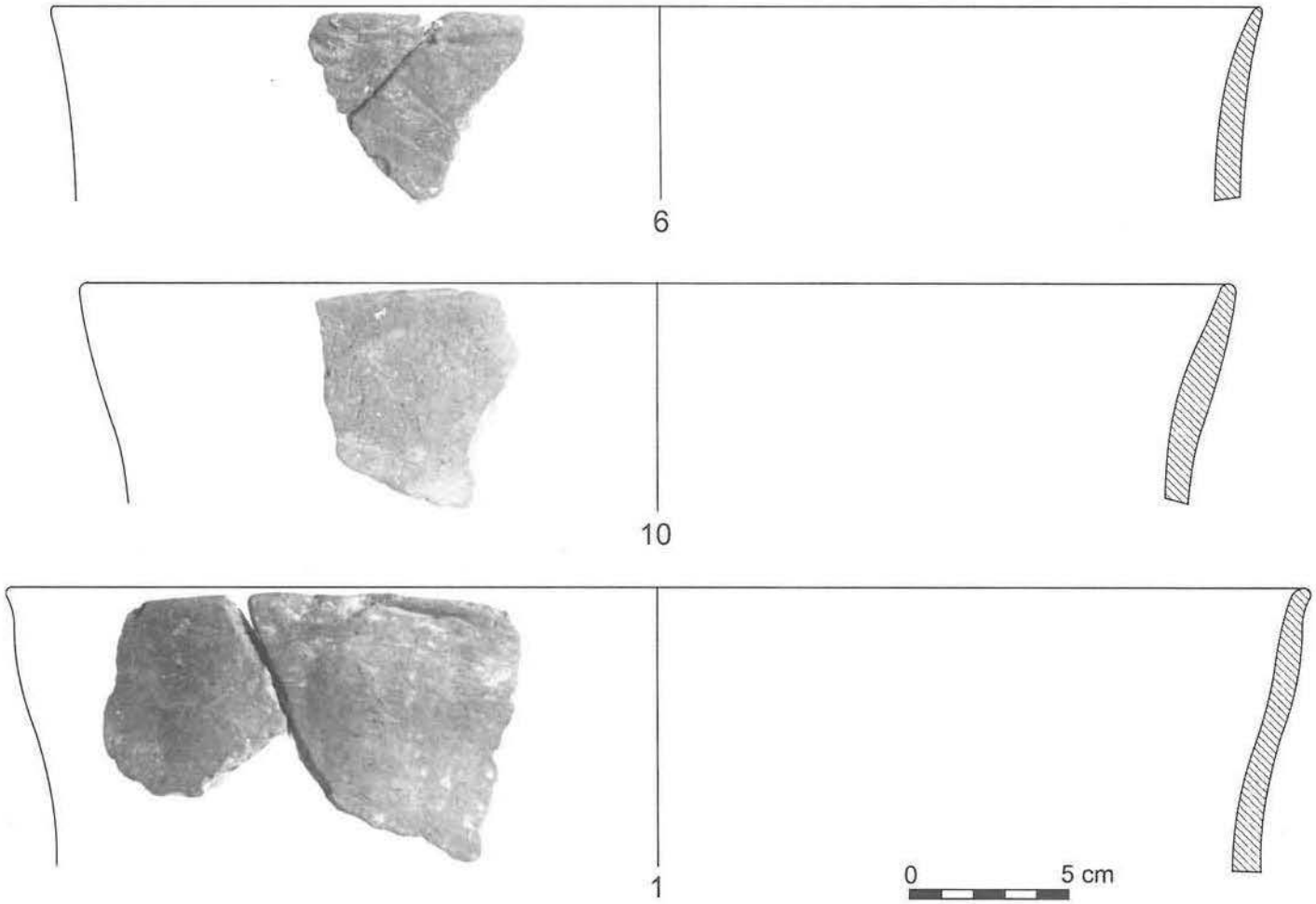


Fig. 125. Finds from Feature 29

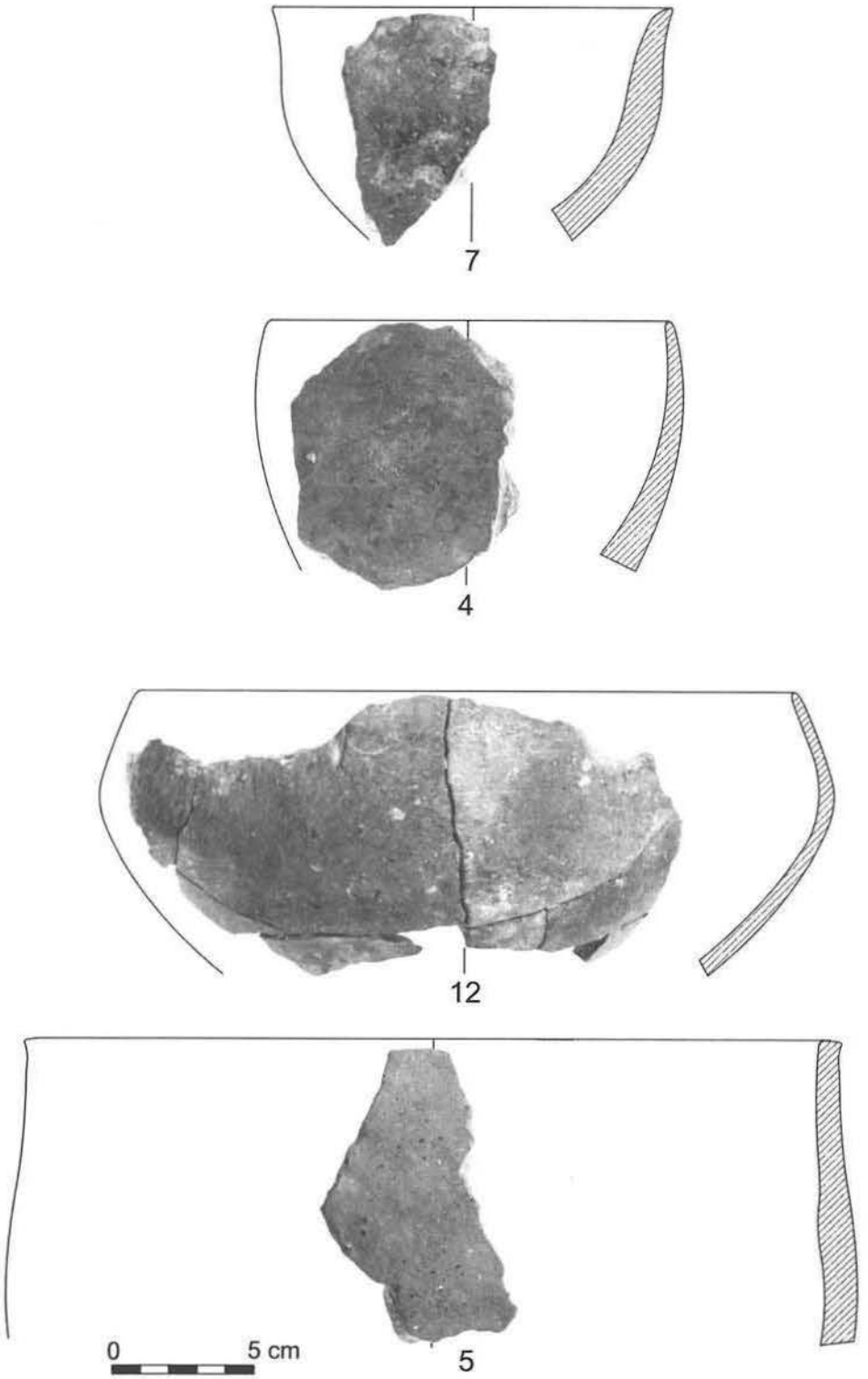


Fig. 126. Finds from Feature 29

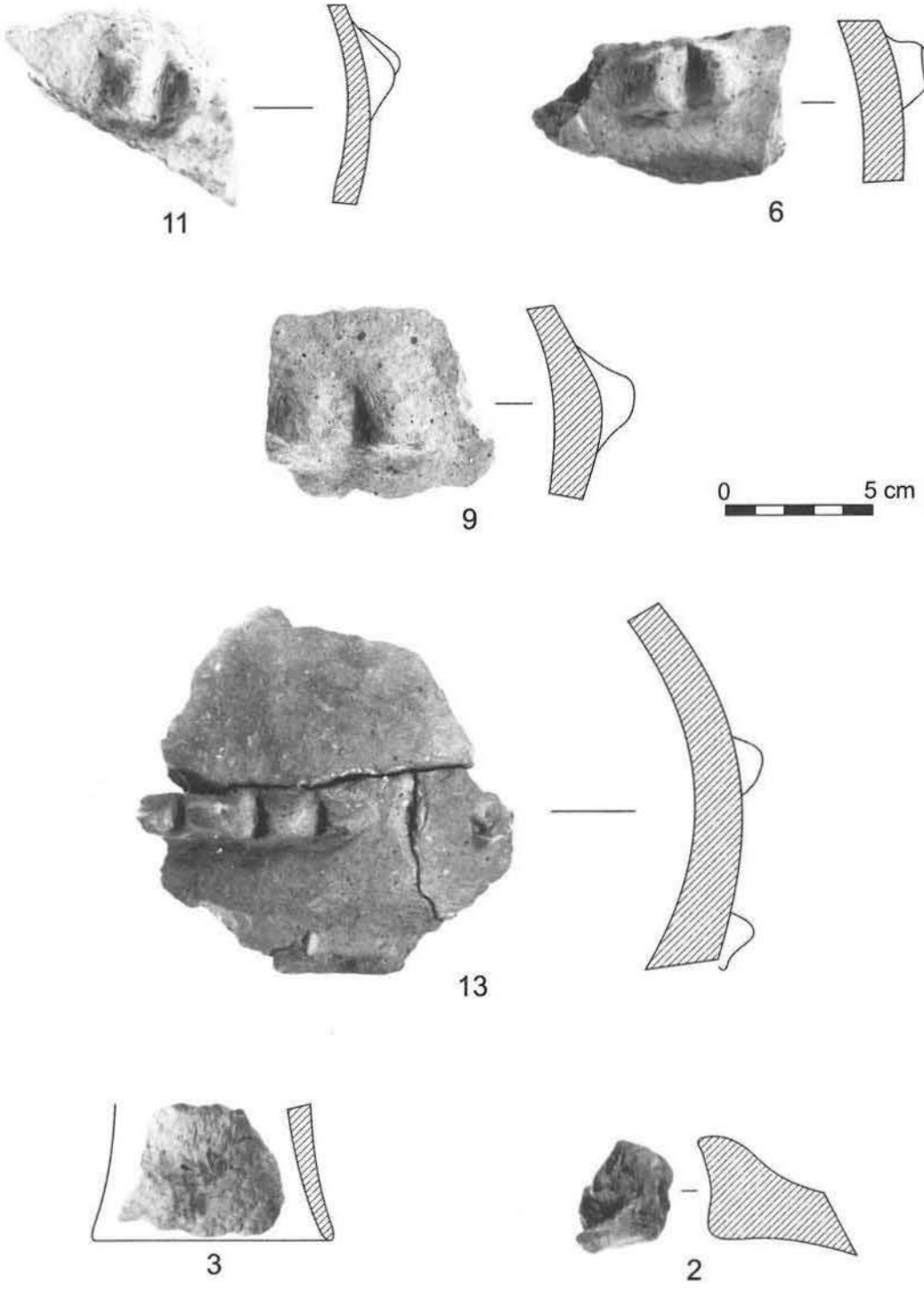


Fig. 127. Finds from Feature 29

Finds[31] *(Figs 129–132)*

A total of 2083 pottery fragments and some chipped stone implements were recovered from this feature.

1. Rim fragment. Grey and red, tempered with chaff and sand, from a poorly fired, black-topped, small storage jar with outturned, straight cut rim made from poorly levigated clay. Rim diam.: 20 cm, wall th.: 0.5–0.8 cm.
2. Body fragment. Dark red, tempered with chaff and sand, from a well-fired, thick-walled, large vessel made from finely levigated clay and decorated with three finger impressions with the protruding clay formed into a knob. Wall th.: 1.8–2.0 cm.
3. Body fragment. Dark red, tempered with chaff and sand, from a poorly fired, larger vessel made from poorly levigated clay, decorated with a finger impressed rib on the belly. Wall th.: 0.7–0.8 cm.
4. Body fragment. Light red, tempered with chaff and sand, "sandwich" core, from a poorly fired, thick-walled storage jar made from finely levigated clay and covered with a dark red slip that has since worn off, decorated with a pointed knob and another knob set obliquely above it. Wall th.: 1.3–1.5 cm.
5. Body fragment. Dark red, tempered with chaff and sand, "sandwich" core, from a well-fired vessel made from finely levigated clay, decorated with a large, horizontally set finger impressed and pinched lug handle. Wall th.: 1 cm and 0.7 cm.
6. Body fragment. Red, tempered with chaff and sand, "sandwich" core, from a well fired, relatively thin-walled storage jar with a vertically set large handle, made from finely levigated clay. The handle is vertically ribbed and there are finger impressions above and below it. Wall th.: 0.7–1.1 cm.
7. Body fragment. Dark red, tempered with chaff and sand, from a well-fired, smaller biconical bowl made from finely levigated clay and covered with a dark red slip. Wall th.: 0.6–1 cm.
8. Body fragment. Red, tempered with chaff and sand, "sandwich" core, from a poorly fired, worn, globular storage jar made from poorly levigated clay, originally polished. Wall th.: 0.9–1.2 cm.
9. Fragment of a pedestalled vessel. Red, "sandwich" core, from a smaller, well-fired pedestalled vessel made from finely levigated clay, with the base of the vessel. Base diam.: 8 cm, wall th.: 0.6–1.2 cm.
10. Fragment of a pedestalled vessel. Reddish-greyish brown, from a well-fired pedestalled vessel or a ring footed vessel. Base diam.: 10.5 cm, h.: 1.7 cm, wall th. : 0.7 cm.
11. Rim fragment. Blackish-grey, tempered with chaff and sand, from a poorly fired, wide mouthed vessel (bowl?) made from poorly levigated clay. The rim is decorated with pinched decoration. Rim diam.: 41 cm, wall th.: 0.8 cm.
12. Rim and body fragment. Light red, tempered with chaff and sand, from a poorly fired, biconical bowl made from finely levigated clay, with worn exterior and polished interior. Rim diam.: 22 cm, wall th.: 0.3–0.6 cm.
13. Body fragment. Red, tempered with chaff and sand (and a larger pebble), "sandwich" core, from a poorly fired, globular vessel made from poorly levigated clay, decorated with horizontally arranged barbotine. Wall th.: 1.1–1.2 cm.
14. Body fragment. Cream, tempered with chaff and sand, from a well fired, small vessel with smoothed exterior and the stub of a vertically set strap handle, made from finely levigated clay. Wall th.: 0.7–0.8 cm.
15. Rim fragment. Red, tempered with chaff and sand, from a well-fired, large biconical bowl made from finely levigated clay, decorated with a horizontal barbotine line. Rim diam.: 32 cm, wall th.: 0.4–0.8 cm.
16. Body fragment. Red, tempered with chaff and sand, from a well-fired, smaller vessel made from finely levigated clay, decorated with a pointed knob. Wall th.: 0.6–0.9 cm.
17. Body fragment. Red, tempered with chaff and sand, from the upper part of a well-fired, biconical vessel made from finely levigated clay. The upper part is slightly incurving, the carination is decorated with a small knob and a wavy line under the knob. Wall th.: 0.4–0.7 cm.
18. Handle. Fragment of a red, poorly fired handle made from poorly levigated clay, tempered with chaff and sand.

[31] Inv. no. 2000.101.1–15; 2000.111.1–25.

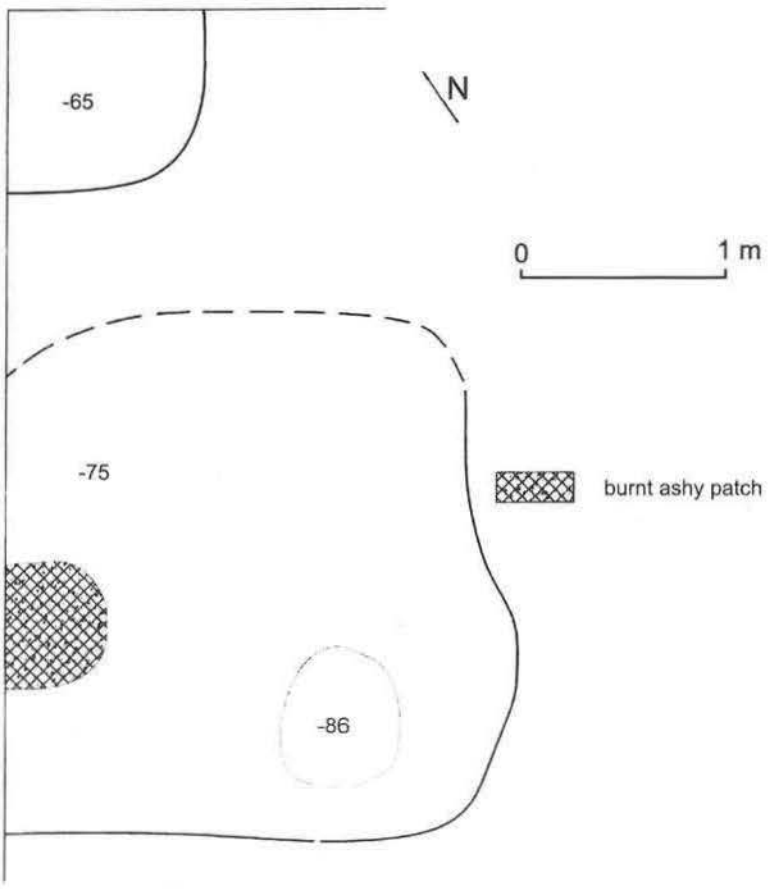


Fig. 128. Features 30-31

19. Spout. Red, cylindrical, upward pointing spout, from a well-fired, smaller vessel made from finely levigated clay and tempered with chaff and sand. Wall th.: 0.5 cm.
20. Body fragment. Red exterior, dark grey interior, tempered with chaff and sand, from a poorly fired, globular vessel made from finely levigated clay. Although the surface is extremely worn, the remains of a pattern made up of vertical and zig-zag lines separated by horizontal lines can still be made out. Wall th.: 0.8 cm.
21. Body fragment. Red exterior, black interior, tempered with chaff and sand, from a well-fired, thick-walled vessel made from finely levigated clay, decorated with a herringbone-like pattern (the lightly incised lines are not contiguous). Wall th.: 1.2 cm.
22. Body fragment. Red and smoky greyish-brown, tempered with chaff and sand, from a poorly fired, smaller vessel made from finely levigated clay, with the stump of a vertically set handle. There are two deeply incised, vertical lines under the handle. Wall th.: 0.7 cm
23. Body fragment. Light red, tempered with chaff and sand, from well-fired, larger vessel made from finely levigated clay, decorated with two bundles of three curved lines. Wall th.: 0.8 cm.
24. Fragment of a clay object. Fragment of a red, well-fired, curved clay object made from poorly levigated clay, perhaps a lid. Its end is decorated with a finger impression. Wall th.: 0.6–1.5 cm, diam.: c. 30 cm.
25. Fragment of a clay object. Red and smoky greyish-brown, well-fired clay object of undefinable form and function, made from poorly levigated clay. Its side is curved, the centre is perforated. Diam. of perforation: 5–6 cm.

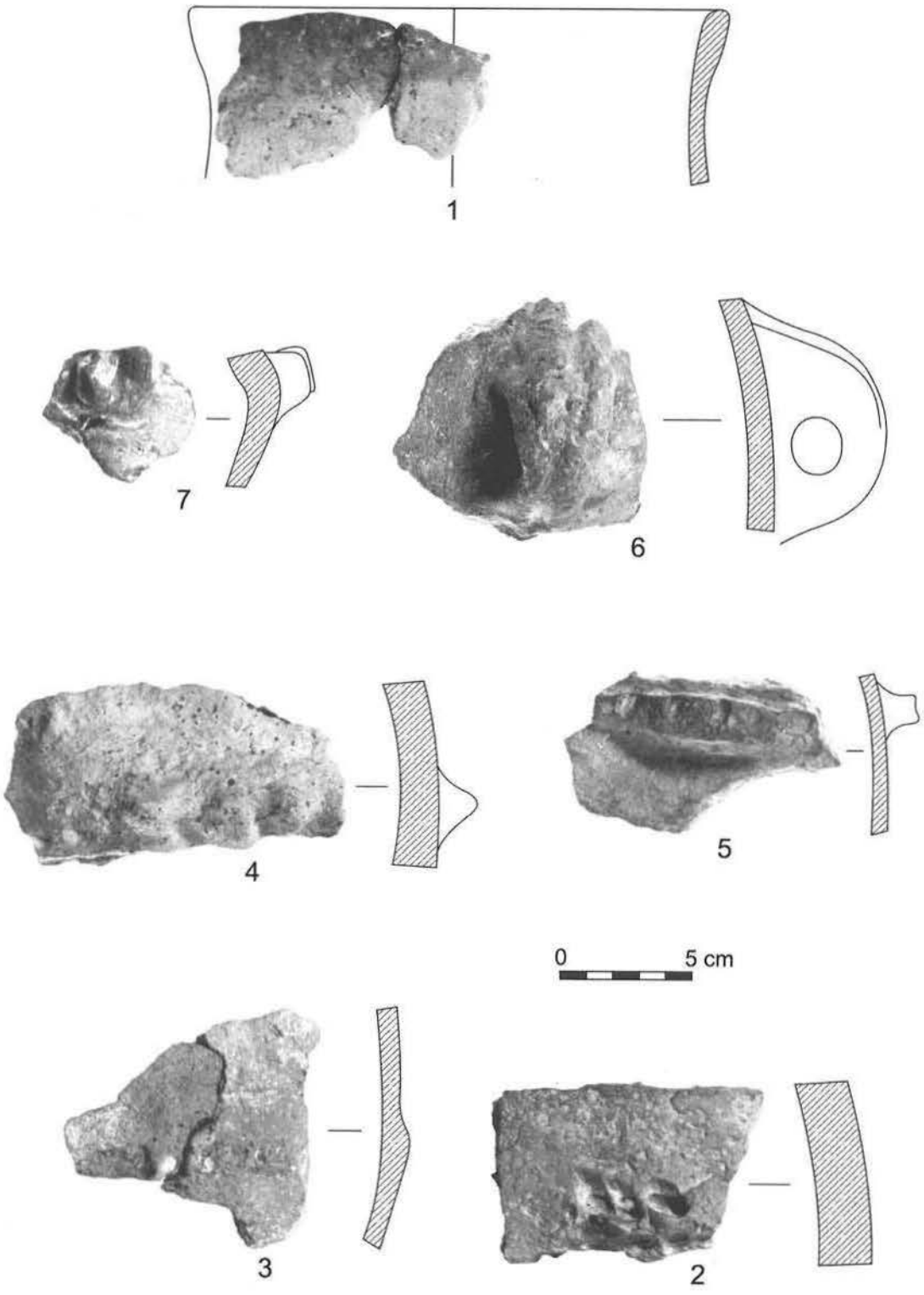


Fig. 129. Finds from Features 30

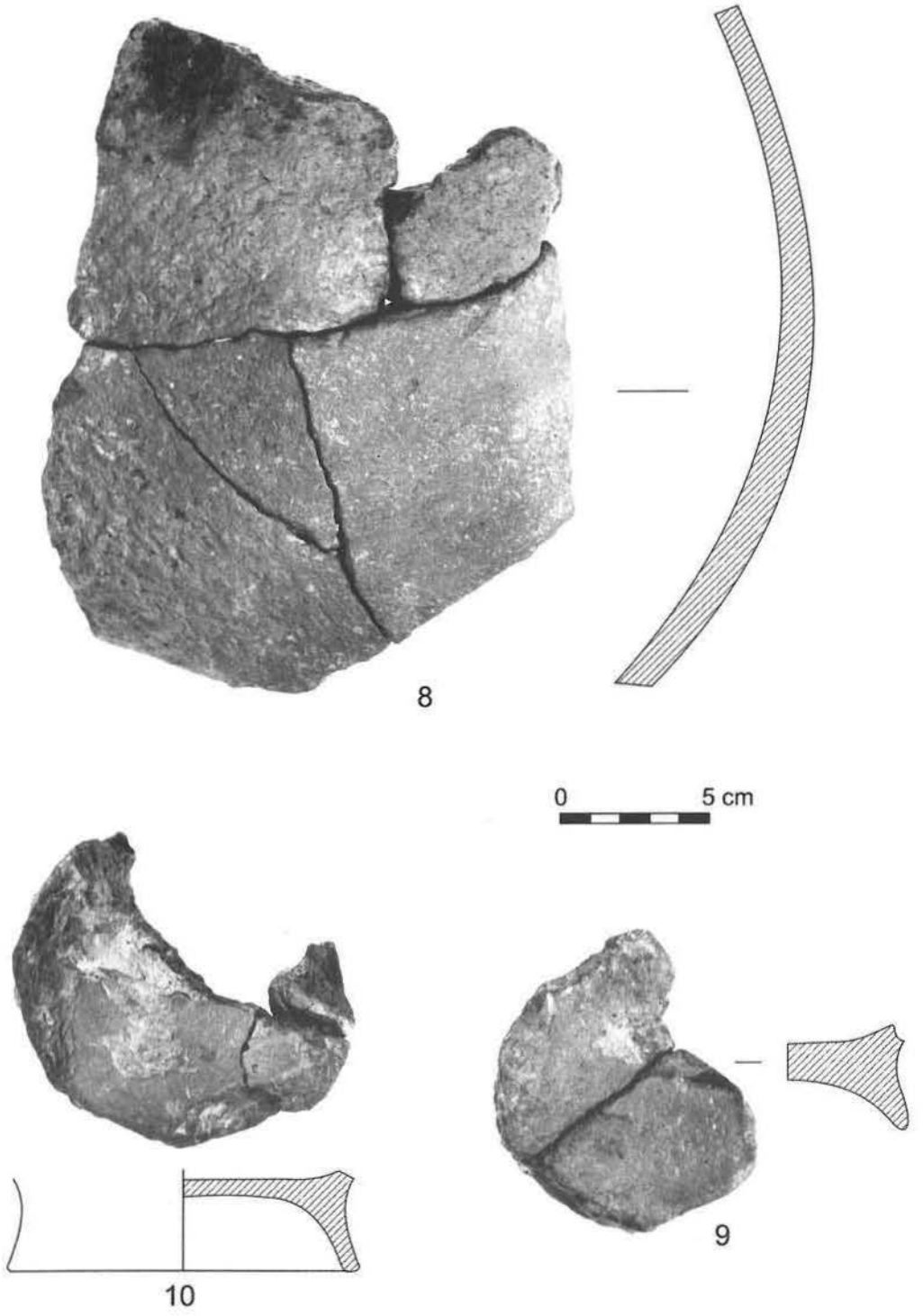


Fig. 130. Finds from Feature 30

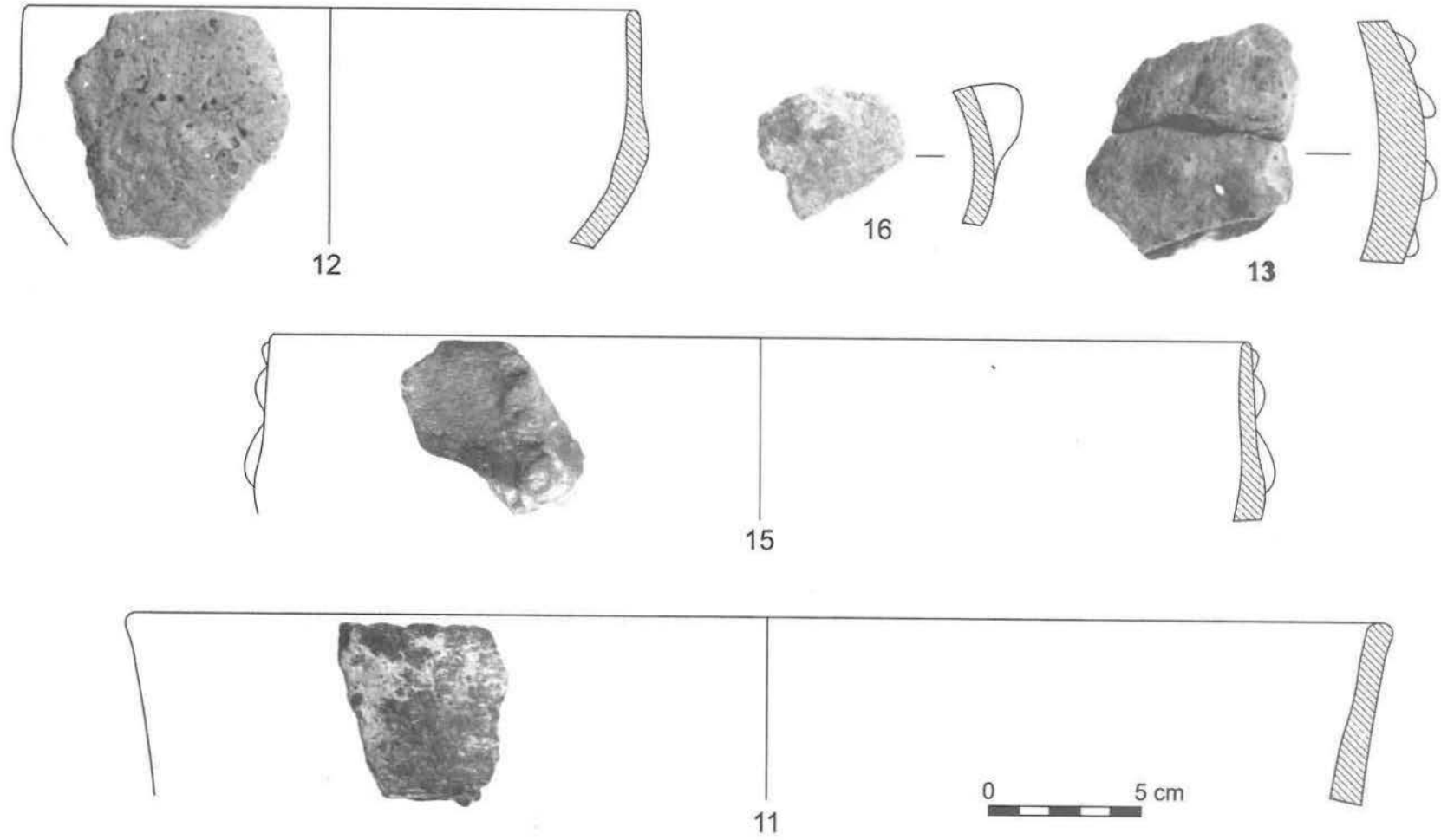


Fig. 131. Finds from Feature 30

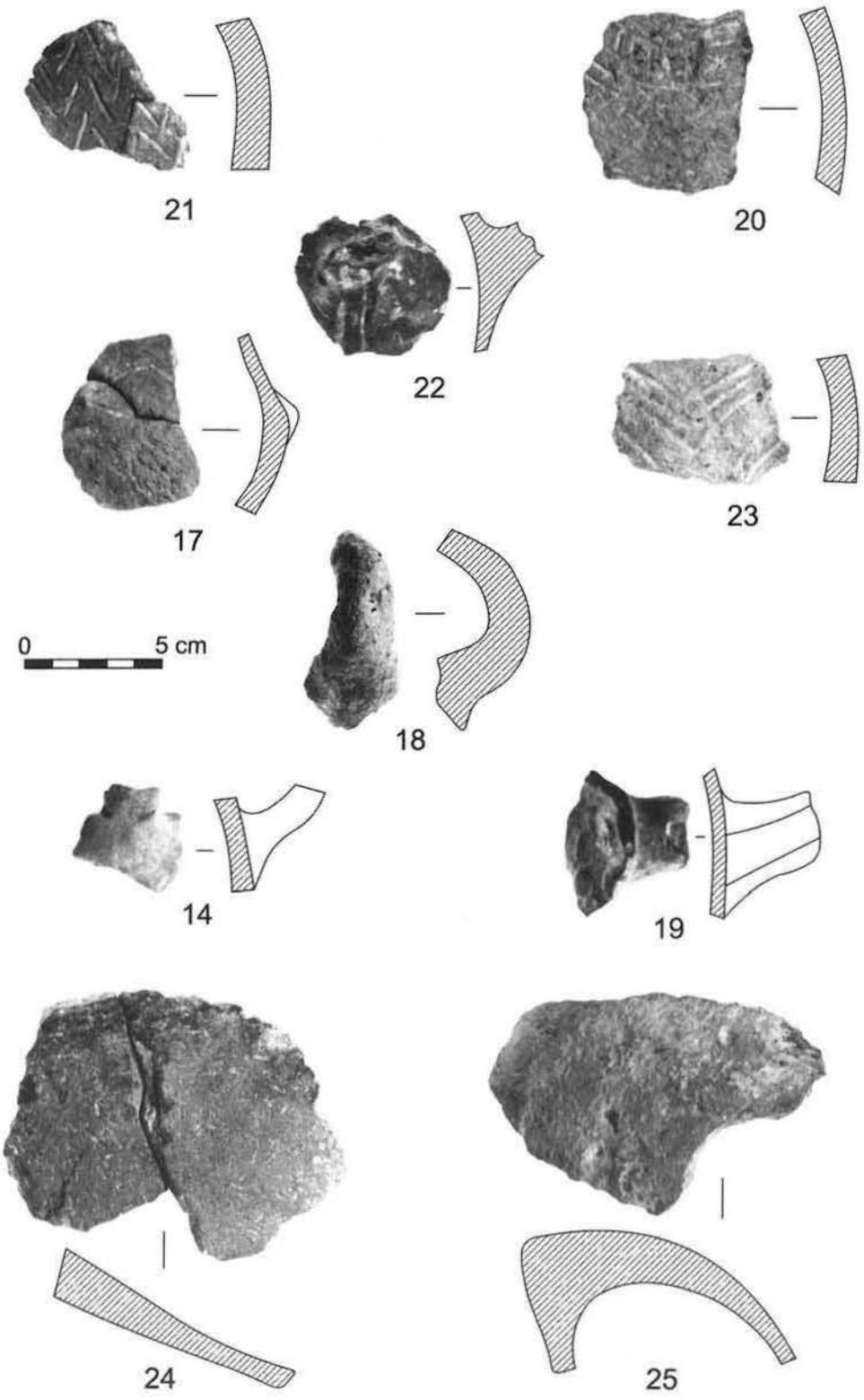


Fig. 132. Finds from Feature 30

Feature 31 *(Fig. 128)*

A slightly oval, small pit lying between Features 30 and 19. A stamped, greyish, granular layer was noted at a depth of 35 cm in the mixed fill. The majority of the finds lay on this layer, usually in a horizontal position. The occupation surface was almost completely covered with finds. In contrast, no finds were recovered from a depth of 45 cm downward. The greatest depth was 80 cm.

Finds[32] *(Figs 133–135)*

A total of 864 pottery fragments and some chipped stone implements were recovered from this feature.

1. Rim fragment. Red, tempered with chaff and sand, "sandwich" core, from a well-fired, large storage jar with outturned rim made from finely levigated clay, polished both on its exterior and interior and decorated with a deeply incised triple meander. Rim diam.: 40 cm, wall th.: 0.8–2.0 cm.
2. Rim fragment. Red and smoky greyish-brown, tempered with chaff and sand, from a well-fired, wide mouthed vessel (conical bowl?) made from poorly levigated clay. The rim is decorated with finger impressions and nail imprints. Rim diam.: 41 cm, wall th.: 0.8–1 cm.
3. Rim fragment. Light brown, tempered with chaff and sand, from a well-fired, hemispherical bowl made from finely levigated clay. The interior was smoothed with some kind of implement. Rim diam.: 28 cm, wall th.: 0.5–0.9 cm.
4. Body fragment. Red, tempered with chaff and sand, "sandwich" core, from a poorly fired, biconical vessel made from poorly levigated clay, decorated with three thin lines above the carination. Wall th.: 1.1 cm.
5. Body fragment. Red, from a well-fired, globular storage jar made from finely levigated clay, polished both on its exterior and interior and decorated with three shallow lines. Wall th.: 1.0 cm.
6. Body fragment. Red, tempered with chaff and sand, "sandwich" core, from a poorly fired, biconical vessel made from poorly levigated clay, decorated with three, lightly incised lines. Wall th.: 0.9–1.2 cm.
7. Rim fragment. Dark red, tempered with chaff and sand, from a large, well-fired storage jar with funnel mouth made from finely levigated clay, decorated with a fine, finger impressed rib under the rim. Rim diam.: 34 cm, wall th.: 0.6–1.2 cm.
8. Rim and body fragment. Dark red, tempered with chaff and sand, from a well-fired, biconical bowl made from finely levigated clay, polished both on its exterior and interior and decorated with a large, thick, finger impressed rib. Rim diam.: 30 cm, wall th.: 0.6–0.8 cm.
9. Body fragment. Red, "sandwich" core, from a poorly fired, globular vessel made from finely levigated clay, decorated with a cylindrical knob with flattened end. Wall th.: 0.9–1.2 cm.
10. Body fragment. Red, "sandwich" core, from the belly of a large, poorly fired, thick-walled, globular vessel made from finely levigated clay, decorated with a finger impressed knob. Wall th.: 1.8–2.0 cm.
11. Body fragment. Light red, tempered with chaff and sand, from a poorly fired, porous, globular storage jar made from poorly levigated clay, decorated with two finger impressed knobs. Wall th.: 0.5–1.1 cm.
12. Rim and body fragment. Red, tempered with chaff and sand, "sandwich" core, from a well-fired pot with inturned rim made from finely levigated clay, decorated with a large, horizontally set handle on the belly. Rim diam.: 16 cm, wall th.: 0.9–1.3 cm.
13. Clay object. Fragment of a red coloured, flat, arched, well-fired clay object made from finely levigated clay, tempered with chaff and sand, covered with a polished, dark red slip on both sides. The corners are rounded. Wall th.: 0.3–0.7 cm.

Feature 32

A small, deep posthole with a diameter of 35–45 cm, lying east of Feature 27, with a depth of 105 cm. Except for a small pottery sherd on its floor, it did not contain any finds.

[32] Inv. no. 2000.102.1–20; 2000.112.1–13.

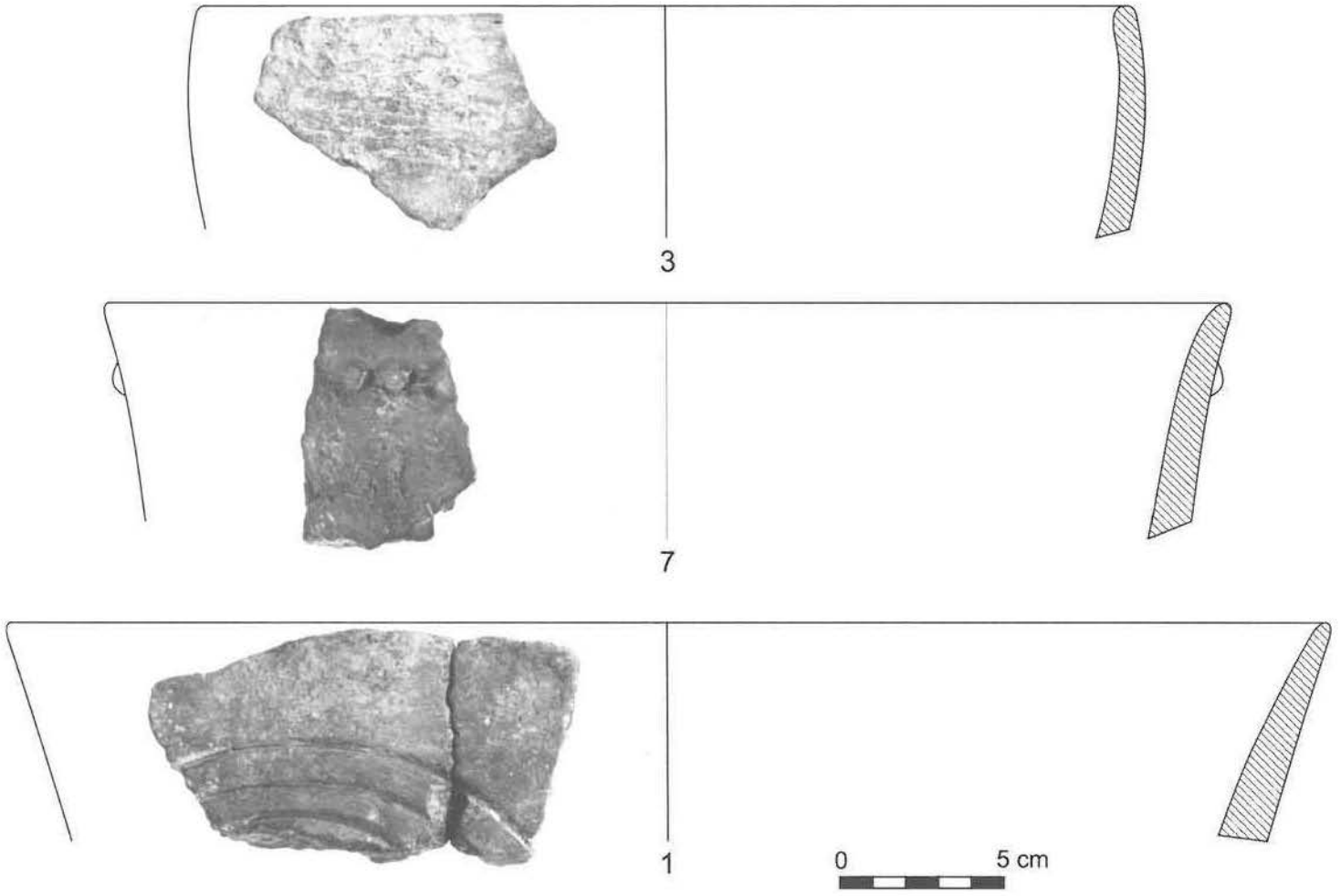


Fig. 133. Finds from Feature 31

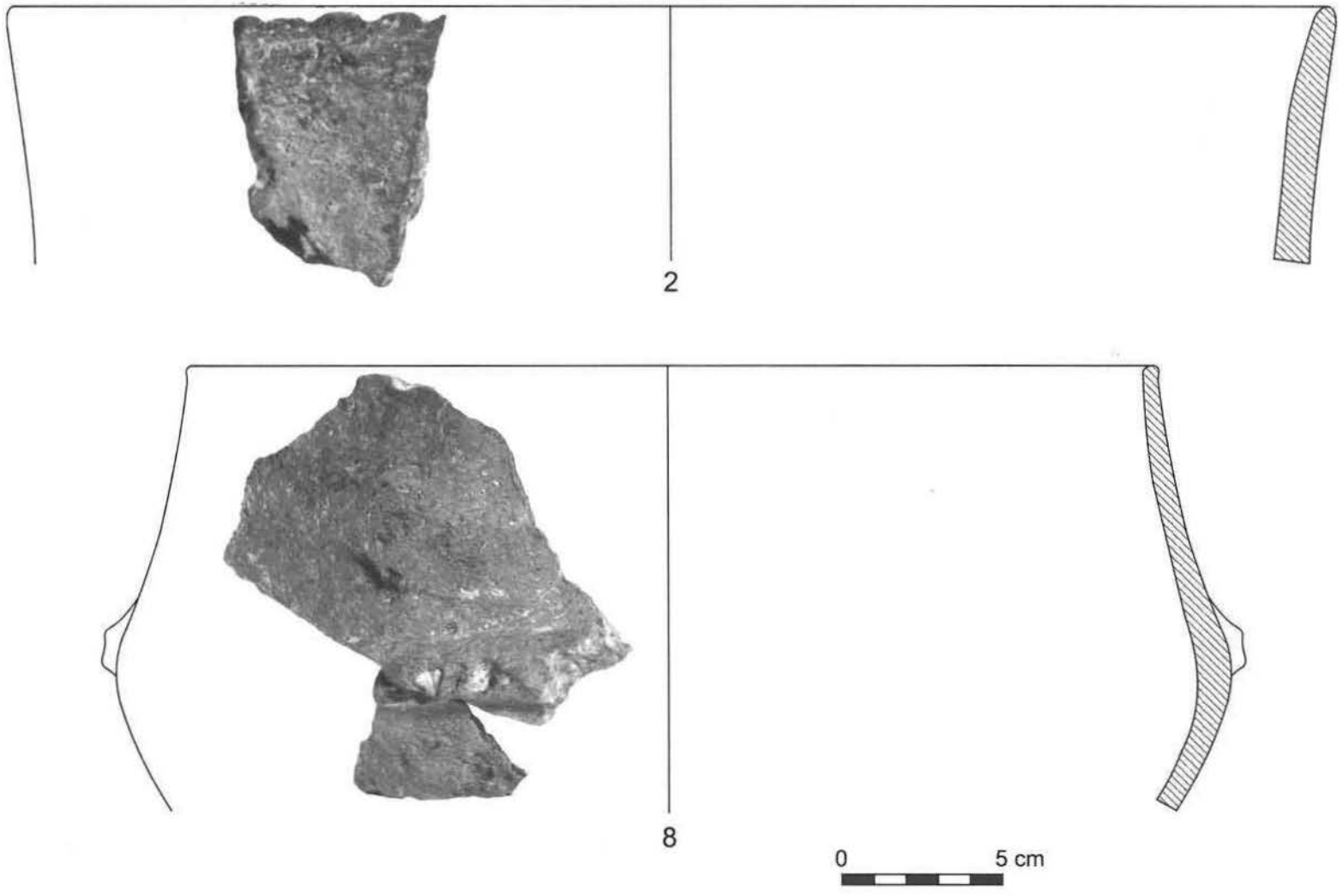


Fig. 134. Finds from Feature 31

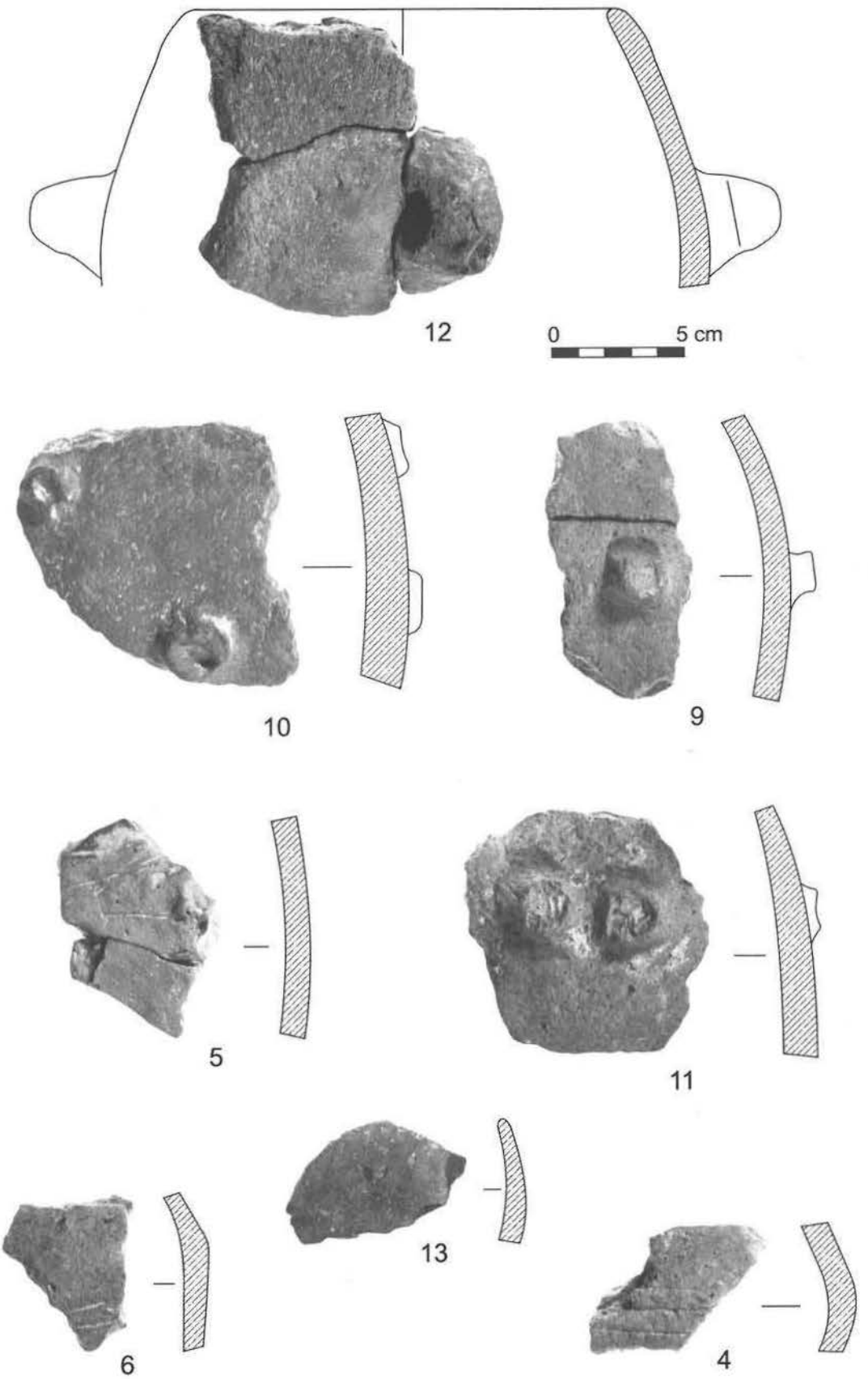


Fig. 135. Finds from Feature 31

Chapter 5

EVALUATION OF THE POTTERY FINDS

STATISTICS

TRENCH I

A total of 5984 pottery fragments were found. The pottery fragments were all tempered with chaff and sand except for the following:

Fragments tempered with crushed pottery: 7
With pebbles: 2
With chaff only: 9
With sand only: 4

A total of 3688 pottery sherds were recovered from the long pits, with an average of 615 sherds per feature.

A total of 2043 pottery sherds were recovered from the inner, shallower pits, with an average of 408 sherds per feature. A total of 253 sherds could not be associated with any feature.

Thin-walled, fine wares: 34
Red-slipped: 47
Polished or smoothed: 61
Black topped: 2

Linear ornament: 23
Smoothed-in line: 4
Applied (rib) ornament: 15
Pinched: 6
Finger impressed: 26
Schlickwurf: 2
Knobbed: 44

A total of 117 sherds were ornamented.

Biconical vessels: 33
Biconical vessels with incurving upper part: 12
Pedestalled vessels: 30

TRENCH II

A total of 9767 pottery fragments were found. The pottery fragments were all tempered with chaff and sand, except for the following:

Fragments tempered with crushed pottery: 11

With pebbles: 1
With chaff only: 7
With sand only: 6

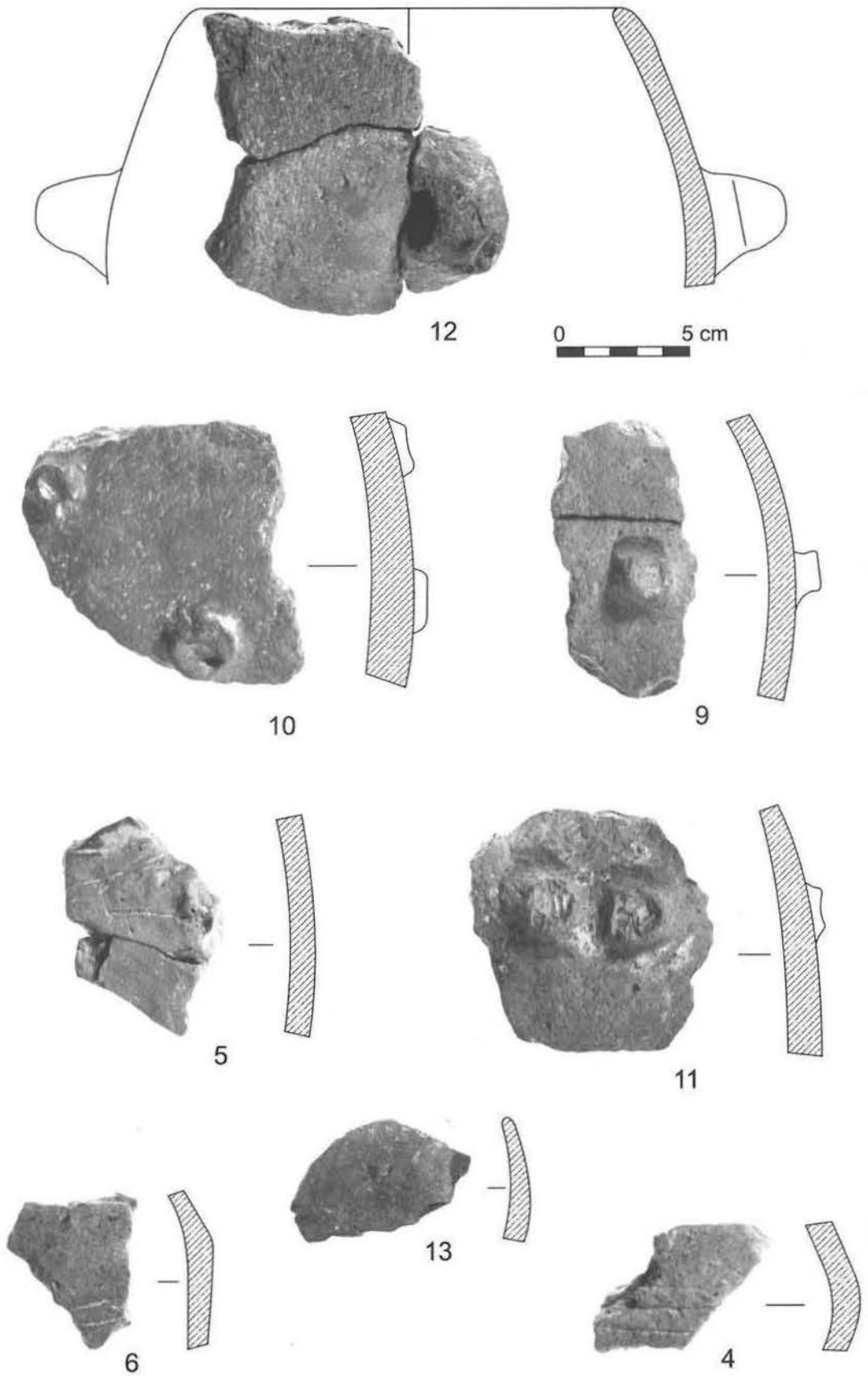


Fig. 135. Finds from Feature 31

Chapter 5

EVALUATION OF THE POTTERY FINDS

STATISTICS

TRENCH I

A total of 5984 pottery fragments were found. The pottery fragments were all tempered with chaff and sand except for the following:

Fragments tempered with crushed pottery: 7
With pebbles: 2
With chaff only: 9
With sand only: 4

A total of 3688 pottery sherds were recovered from the long pits, with an average of 615 sherds per feature.

A total of 2043 pottery sherds were recovered from the inner, shallower pits, with an average of 408 sherds per feature. A total of 253 sherds could not be associated with any feature.

Thin-walled, fine wares: 34
Red-slipped: 47
Polished or smoothed: 61
Black topped: 2

Linear ornament: 23
Smoothed-in line: 4
Applied (rib) ornament: 15
Pinched: 6
Finger impressed: 26
Schlickwurf: 2
Knobbed: 44

A total of 117 sherds were ornamented.

Biconical vessels: 33
Biconical vessels with incurving upper part: 12
Pedestalled vessels: 30

TRENCH II

A total of 9767 pottery fragments were found. The pottery fragments were all tempered with chaff and sand, except for the following:

Fragments tempered with crushed pottery: 11

With pebbles: 1
With chaff only: 7
With sand only: 6

A total of 3939 pottery sherds were recovered from the long pits, with an average of 492 sherds per feature.

A total of 5700 pottery sherds were recovered from the inner, shallower pits, with an average of 950 sherds per feature.

A total of 128 sherds could not be associated with any feature.

Thin-walled, fine wares: 72
Red-slipped: 44
Polished: 73
Black topped: 3

Linear ornament: 44
Smoothed-in: 2
Applied (rib) ornament: 13
Pinched: 3
Finger impressed: 35
Schlickwurf: 2
Barbotine, finger drawn: 9
Knobbed: 45

A total of 273 sherds were ornamented.

Biconical vessels: 35
Biconical vessels with concave upper part: 13
Pedestalled vessels: 21

Statistics for Trenches I–II *(Fig. 136)*

A total of 15751 pottery fragments were found.

A total of 7627 pottery sherds were recovered from the long pits, with an average of 1107 sherds per feature.

A total of 7743 pottery sherds were recovered from the inner, shallower pits, with an average of 1358 sherds per feature.

The pottery fragments were all tempered with chaff and sand except for the following:

Fragments tempered with crushed pottery: 18
With pebbles: 3
With chaff only: 16
With sand only: 10

Thin-walled, fine wares: 106
Red-slipped: 91
Polished: 134
Black topped: 5

Linear ornament: 77
Smoothed-in lines: 5
Applied (rib) ornament: 28
Pinched: 9
Finger impressed: 61
Schlickwurf and barbotine: 13

Knobbed: 89
A total of 282 sherds were ornamented.

Biconical vessels: 68
Biconical vessels with concave upper part: 25
Pedestalled vessels: 51

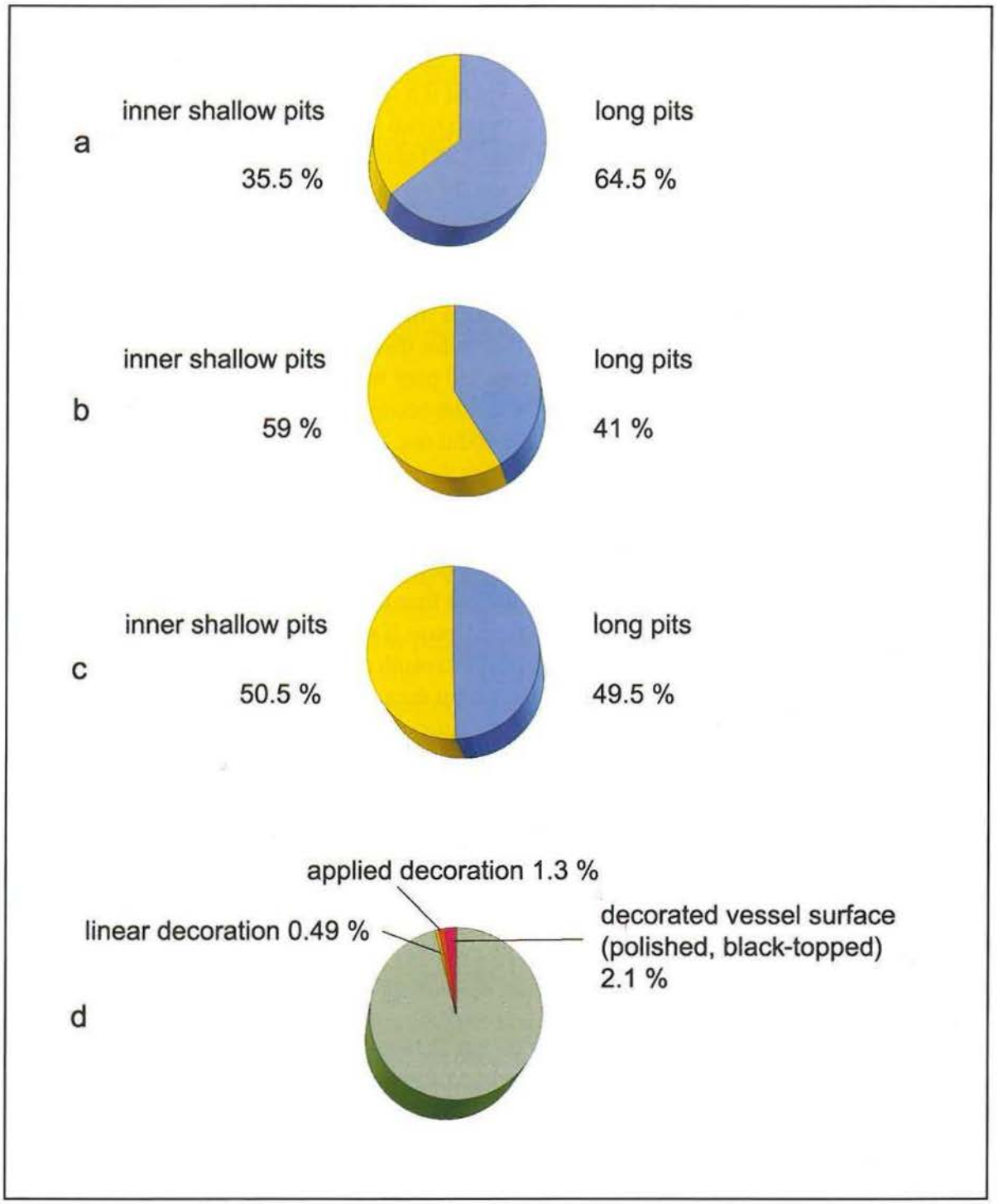


Fig. 136. Statistical chart. *a:* Trench I; *b:* Trench II; *c:* Trenches I–II; *d:* the ratio of decorated finds

Conclusions drawn from the statistics

In view of the fact that the Pityerdomb settlement was rather small, comprising two houses and the associated areas, one cannot draw far-reaching conclusions from the roughly sixteen thousand pottery sherds recovered during the excavations. Knowing that erosion destroyed a part of the settlement, we may not even assume that one household apparently used twice as many vessels as the other one. Still, a few conclusions can be drawn from the above statistics, although it must be borne in mind that these data are practically meaningless *in themselves*. However, collating them with other evidence may be helpful in confirming or, conversely, challenging a few controversial points.

In the light of the above, we must regard as typical if a specific vessel form or ornamentation is proportionately less frequent among the finds from Trench I, yielding a lower amount of pottery. In this sense, the ratio of finely levigated, well-fired and carefully made pottery among the finds from Trench I and II conveys little information and the same holds true for finger impressed and knobbed decoration that occurs more frequently among the finds from Trench II, from which a larger pottery assemblage was recovered.

The fact that in the case of House I, the majority of the pottery finds was brought to light from the long pits flanking the building, while in the case of House II, the pits inside the house yielded more finds is not particularly noteworthy. The reason for this difference can be sought in the way the two houses perished: although both buildings fell prey to fire, it is by no means certain that the flames spread equally rapidly. It is possible that the occupants of House I had time to salvage some of their possessions, while those of House II did not. It is thus possible that the finds from House I are made up of artefacts that fell into the pits during the use-life of the house, while those from House II were household articles still used when the house burned down. The difference can perhaps in part be attributed to taphonomic reasons. The burnt debris from the perished house did not cover the house remains evenly and some parts were probably more exposed to the vicissitudes of weather and to temperature fluctuations than others. The erosion in the area around House I was quite strong, while in the area where House II was built, erosion was strongest on the cone of the hill, an area with a diameter of 10–12 m south of the house. It is therefore possible that the interior of House I perished to a greater extent than that of House II.

The pottery finds include relatively few decorated pieces: only 1.79 per cent were ornamented. In view of the fact that some sherds bore different types of decoration (such as a combination of knobs and pinched decoration), the overall ratio of decorated wares was probably even lower. In comparison to other contemporary pottery assemblages and as regards the entire ceramic inventory, the ratio of fine wares is definitely noteworthy (2.1 per cent). Moreover, we may assume that the number of red slipped, smoothed or polished sherds was at least twice as high since the acidic clayey soil wore away the surface of the sherds. Interestingly enough, smoothing, polishing and the red slip was applied not only to thin-walled, fine wares, but also to larger, thick-walled vessels. The pedestalled vessels, usually with a smoothed surface and often covered with a slip, must certainly be mentioned in this respect.

The proportion of linear patterns in early Linear Pottery assemblages is always one of the most interesting questions. This ratio was extremely low at the Pityerdomb site: twenty-three fragments from Trench I (yielding a total of 5984 sherds) and forty-four from Trench II (yielding a total of 9767). The same proportion is obtained if the number of linear ornamented sherds is compared to the entire ceramic assemblage (15751:77, i.e. less than 0.5 per cent).

As regards smoothed-in patterns and pinched decoration, it is noteworthy that the former occurs twice as many times in the smaller assemblage of Trench I than in the larger material of

Trench II. However, the number of sherds decorated in this manner is so low that even though one is tempted to draw certain conclusions regarding internal chronology, it would be a grave mistake to do so, especially in view of the fact that the proportion of biconical vessels, a pottery type suitable for a finer internal chronology, does not reflect a similar disproportionateness.

Regarding the entire ceramic assemblage, these numbers suggest entirely different correlations. The proportion of linear decoration and biconical vessels is about 0.5 per cent in each case (although considerably more biconical vessels can be assumed since only carinated fragments could be determined as definitely representing this vessel form). The occurrence of this decoration and this pottery form shows different frequencies in the early Linear Pottery assemblages from the Carpathian Basin (as far as can be made out from the publications). Linear decoration is usually more frequent, while biconical vessels occur more rarely. Although these differences may be suitable for drawing certain conclusions as regards internal chronological and cultural context, they are irrelevant in themselves and only become meaningful if collated with other evidence.

In the light of the above we may say that – although sixteen thousand fragments cannot be regarded as a small find material in the case of early Linear Pottery culture sites – the statistical distribution of the finds does not indicate a possibly different function for the two buildings or a (slight) chronological difference between the two. Much more important is the fact that the formal and stylistic traits of the pottery, as well as the proportion of certain decorations suggest an early date for the assemblage.

Fabric

The pottery recovered from the two trenches indicates that the vessels were made using the same technique. Most vessels were tempered with chaff and sand; the potters of the settlement rarely used other tempering agents, although they sometimes mixed a little crushed pottery into the clay. The use of crushed pottery as a tempering agent was minimal. Elsewhere, especially in Austria, the occurrence of vessels tempered with crushed pottery is regarded as typical for the earliest Linear Pottery phase.[1] Smaller pebbles were noted in three cases and in view of the size of the ceramic sample, it is possible that their presence in the fabric was accidental. The number of pottery fragments tempered with chaff only is minimal (16) and it is unclear how many vessels they represent. These vessels were of a rather inferior quality compared to the average; they are hardly fired and almost appear to have been dried in the sun. Ten other sherds, whose fabric did not contain organic temper, come from more carefully made, well fired vessels. In sum we may say that the overwhelming majority of the pottery from Pityerdomb was rather uniform in that it was tempered with sand and organic chaff.

Chaff was not used as a tempering agent in the Early Neolithic of South-East Europe, for example in Greece; its use can only be noted in the northerly regions of the culture province, in the Körös–Criş and Starčevo culture. The tempering agents used in pottery making changed over time, and regional differences within the cultures can also be discerned.[2] The pottery from western Bulgaria that shares many similarities with the Starčevo vessels was tempered exclusively with sand, as shown by the wares from Gălăbnik and Kovačevo; in terms of pottery temper, this region resembles Early Neolithic Greece.[3] The proportion of organic temper declined during the late Starčevo phase in many areas,[4] but in Slavonia and Transdanubia chaff tempering remained

[1] *Harrer–Lenneis* (2001) 34.

[2] For the distribution of chaff tempering in South-East Europe, cp. *Kalicz* (1990) 49–53.

[3] *Perničeva* (1990) 102.

[4] *Radovanović* (1996) 319.

dominant until the final, Spiraloid B phase of the culture (except for a few red slipped sherds).[5] On the late Starčevo sites in western Transdanubia, lying on the northern fringes of the culture's distribution, sand was also used in addition to chaff (to a smaller extent at Vörs–Máriaasszonysziget and to a slightly greater extent at Gellénháza–Városrét).[6] The pottery finds from the Andráshida–Gébárti-tó site, contemporary with the Vörs and Gellénháza settlements, but exhibiting also a number of stylistic traits typical for the transition to the Linear Pottery, included a higher proportion of chaff tempered pottery.[7] The Malo Korenovo pottery, emerging after the decline of the Starčevo culture, was tempered with small pebbles and sand, while chaff was almost never used.[8] Although chaff temper dominated the earliest Linear Pottery in Transdanubia, it is possible that in this respect the Pityerdomb site has more in common with northern Croatia, a possibility supported also by the bright red colour of the later Malo Korenovo wares.

It is possible that the use of chaff or minerals as tempering agents was not simply a question of potting tradition, but was related to the function of the vessels. D. Bailey has suggested that chaff tempered vessels were used for storing various commodities, rather than for cooking since these vessels are not particularly heat resistant. He also associated the use of differing tempering agents with different life-styles, suggesting that chaff tempered vessels could be manufactured more quickly, were lighter and could thus be transported more easily, while vessels tempered with sand and tiny pebbles were more suitable for cooking.[9] The former would correspond to a more mobile, the latter to an essentially sedentary life-style. In the case of the Starčevo settlements of Transdanubia – Vörs, Gellénháza, Andráshida–Gébárti-tó – and the Pityerdomb site, there was no apparent correlation between the tempering agents and the life-style of the communities, in other words, there is no indication that the Andráshida community was less sedentary than the occupants of the Vörs or the Pityerdomb settlement. Still, D. Bailey may have a valid point since the few chaff tempered vessels found at Pityerdomb were of a remarkably poor quality and they would probably have broken if heated or brought into contact with fire.

One of the most distinctive traits of the pottery from Pityerdomb is its bright red or brick red colour *(Fig. 137a-c),* indicating that the vessels were fired in an oxidizing atmosphere. Pottery was usually fired in this manner in the Early Neolithic, although N. Kalicz has suggested that wares fired both in an oxidizing and in a reducing atmosphere were made during the earliest Linear Pottery phase.[10] A few sherds with black mottling suggest that this was the case at Pityerdomb too. The blackish colour of some pottery fragments, observed also in the Starčevo assemblages from Transdanubia,[11] indicates that the smoke was choked back for a few minutes during the last phase of firing. The black mottling was the result of contact between the fuel and the vessel surface.

This leads us to the problem of pottery kilns. We did not find any kilns during the excavations. However, the lack of kilns does not necessarily mean that there were no kilns since it is uncertain whether all of the one-time features survived and whether we uncovered all of these.

In a recent study, P. Yiouni discussed the techniques of Neolithic pottery firing.[12] She distinguished two modes of firing vessels: the first in firing pits, the second in pottery kilns. In the former, the fuel and the pots simply share the same area, while in a kiln they are separated from each other. Naturally enough, only smaller temperatures can be attained in firing pits and

[5] *Kalicz* (1990) 49.
[6] *Kalicz–M. Virág–T. Biró* (1998) 160; *H. Simon* (1996) 60.
[7] *Horváth–H. Simon* (1997) 18; *H. Simon* (2002).
[8] *Težak-Gregl* (1993) 68. I consider Težak-Gregl's early dating to be entirely unfounded.
[9] *Bailey* (2000) 87.
[10] *Kalicz-Schreiber–Kalicz* (1992) 51.
[11] *Kalicz* (1990) 53.
[12] *Yiouni* (2000) 206.

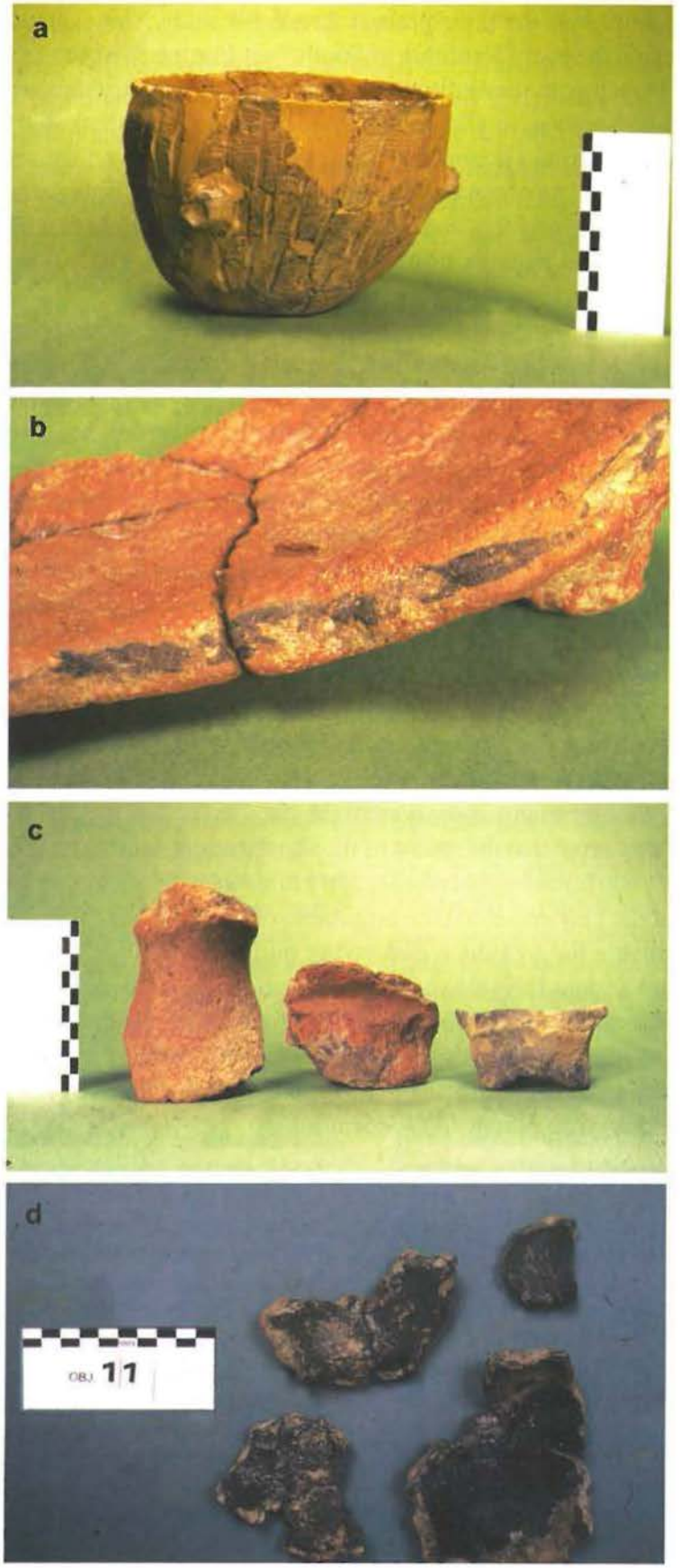


Fig. 137. Pottery from Pityerdomb

the potter has less control over the firing process. In another study, Yiouni argued that pottery was not fired in kilns during the Early Neolithic of South-East Europe.[13] At the same time, a number of kilns are known from the Starčevo distribution in the north. M. Nica uncovered kilns with one or two pottery firing chambers at Cîrcea, while K. Minichreiter interpreted one of the pits at Zadubravlje as a pottery firing pit; she also suggested that one area of the settlement had been used by potters.[14] However, no pottery kilns have yet been found in Transdanubia and in view of the smoky patches on vessel surfaces and the relatively low temperature at which the pottery was fired, as well as the lack of features that could be interpreted as kilns, it seems likely that at Pityerdomb the pottery was fired in pits.

The "sandwich" core of most vessels, namely that the exterior and interior of the vessel was red, while the actual core was black indicates a low firing temperature. The firing temperature of Early Neolithic pottery is usually put below 700 °C *(Fig. 137b).*[15]

A relatively high number of pottery fragments from the Pityerdomb site was covered with a red slip, often polished. The genuine proportion of red-slipped pottery was probably higher than would appear from the statistics since the acidic soil often destroyed the entire vessel surface. In many cases, we may assume not only the destruction of the one-time slip, but also of black painted patterns since the original red colour on the vessel interior and exterior was worn to such an extent that only the black core of the vessel survived. Surprisingly enough, a red slip was applied not only to the fine wares, but also to the exterior – and sometimes interior – of cooking pots and storage jars. The reason for coating these vessels with a slip was not simply aesthetic, but also practical: the slip applied onto vessels before firing, either by immersion in semiliquid clay or (in the case of larger pots) by splashing the vessel with this wash, hid the traces of smoothing after the vessel was built, the vessel surface became smoother and its porosity also decreased, meaning that it became more watertight.

Experiments have shown[16] that the colour of the slip depended on the duration and temperature of firing. A brownish slip turns bright red after forty minutes of firing at a temperature of 800 °C. The iron contents of the clay enhanced the brightness of the slip. The local clay, containing iron concretions, was suitable for creating a dark red or purplish red slip. Obviously, the reason for coating vessels with a dark red slip also had cultural reasons, being a tradition rooted in the Early Neolithic of South-East Europe. In other words, the frequency of a dark red slip on the pottery from Pityerdomb can hardly be simply attributed to the properties of the locally available clay. The practice of polishing the slip can also be explained by the traditions of early Balkanic pottery manufacture, rather than with practical considerations.

[13] *Yiouni* (1996) 70.
[14] *Minichreiter* (1992b) 21 and Fig. 2.
[15] *Yiouni* (1996) 70; *Manson* (1995).
[16] *Yiouni* (1996) 63.

Vessel types[17]

In terms of their fabric, two basic categories can be distinguished at Pityerdomb, namely fine and household pottery. The first is made up of thin-walled, finely levigated vessels covered with a red slip both on the exterior and interior, often polished, while the latter comprises the thick-walled, less carefully made coarse pottery. However, there are two difficulties as regards this categorization: a polished, red slip can sometimes be noted on large, thick-walled storage jars, as can linear and smoothed-in decoration. As mentioned above, the acidic soil destroyed the vessel surfaces to such an extent that it is often impossible to determine the original vessel surface. In other words, vessel surface is not a good criterion for the categorization of this pottery. The other possible categorization calls for distinguishing vessel types. With a few exceptions, the same types occur among fine wares and coarse pottery, in other words, we could not distinguish specifically fine wares and household pottery.[18] In cases where one or the other seems to dominate, this will be indicated in the description.

1. Bowls (Fig. 138)

1.1. Conical bowl

This less carefully made, mostly undecorated, thick-walled vessel appeared during the classical (Linear B) phase of the Starčevo culture. Although the vessel form survived over extensive areas of the early Linear Pottery distribution, it is not a particularly frequent type. Ten sherds probably come from a conical bowl: 16/5 *(Fig. 67)*,[19] 17/10 *(Fig. 83)*, 24/1, 24/3 *(Fig. 110)* and 24/14 *(Fig. 112)*, as well as fragments 9/4 *(Fig. 28)*, 19/1 *(Fig. 89)*, 19/34 *(Fig. 96)*, 30/11 *(Fig. 131)* and

[17] The section describing the pottery types and decorative motifs of the ceramic finds from Pityerdomb also includes a brief discussion of analogous finds from southern and western Transdanubia, as well as from more distant regions in order to outline the chronology and the spatial distribution of a particular vessel type or decorative motif. Regarding the chorological analysis of individual vessel types, it must be noted that many vessels and many pottery fragments have been repeatedly published in both Hungarian and foreign journals and publications. Therefore, I have always quoted the study containing the most detailed description of a particular site and its finds. These include the studies by St. Dimitrijević and K. Minichreiter, as well as N. Kalicz's studies on the Starčevo culture and his publications on the Budapest–Aranyhegyi út–Mocsáros site. In the case of finds and find assemblages published in different studies, I have consistently quoted Dimitrijević's 1969 article published in *Archaeologia Iugoslavica*, K. Minichreiter's 1992 monograph, N. Kalicz's 1990 study and his report on the Budapest–Aranyhegyi út-Mocsáros site, written together with his late wife, Rózsa Schreiber. By doing so, I hope to have avoided the mistake of regarding one and the same artefact appearing in different illustrations and photos (photographed or drawn from different angles) as two or more different finds and to thereby inadvertly increase the frequency of a particular type. Finally, I wish to note that I am fully aware of the difficulties posed by the fact that R. Gläser's doctoral thesis, successfully defended in 1994, remains unpublished to this very day. Since, however, his thesis is the most comprehensive overview of the Transdanubian Linear Pottery and since his analysis is in part based on several still unpublished find assemblages, I could hardly ignore these finds. I am also aware of the fact that most of the sites quoted by R. Gläser were excavated by N. Kalicz and that most are still unpublished. Although in referring to R. Gläser's work I am citing from a publicly defended thesis, it must nonetheless be emphasized that his evaluation of the sites and their finds is in many cases based on N. Kalicz's work.

[18] Similarly to the ceramic inventory from Pityerdomb, there is no clear-cut boundary between the fine wares and the household pottery in the assemblages from the late Starčevo site at Gellénháza–Városrét, or the finds from Andráshida–Gébárti-tó and Budapest–Aranyhegyi-út-Mocsáros. Cp. *H. Simon* (1996) 60–61; *Horváth–H. Simon* (1997) 17; *Kalicz-Schreiber–Kalicz* (1992) 51–52.

[19] Individual finds are in each case quoted in the following manner: the number of the feature where it was found (here Feature 16), followed by the number on the illustration as well as in the catalogue (here 5), followed by the illustration number (here *Fig. 67*).

31/1 *(Fig. 133)* on the basis of their rim. Comparable bowls have been reported from Lánycsók[20] and Barcs;[21] this form also occurs in the late Starčevo assemblages south of the Drava, for example at Vinkovci–Marketplace[22] and Golokut–Vizić.[23] The fragments of a similar bowl have been found at Kaposvár–Deseda,[24] a late Starčevo site in Transdanubia, while two comparable bowl fragments have been published from Gellénháza,[25] a settlement lying near the Pityerdomb.

The finds from Zalavár–Keleti-tanya, a nearby site assigned to the early Linear Pottery, include similar bowl fragments,[26] as does the ceramic assemblage from Becsehely II,[27] the earliest Linear Pottery site near Hungary's southwestern border. Of the early Linear Pottery sites in eastern Transdanubia, a comparable bowl type was found at Medina–Margitsziget.[28] This form appears in northern Transdanubia and also in Lower Austria, among the finds from Bicske,[29] Budapest–Aranyhegyi Road–Mocsáros[30] and Frauenhofen.[31] Bowls of this type have also been brought to light at Bíňa (Bény) and Milanovce (Nyitranagykér),[32] two early Linear Pottery sites in southwest Slovakia. The type was probably transmitted to Bohemia from this area.

1.2. Biconical bowl with a non-incurving upper part

The distinctive feature of this bowl is that the carination lies close to the rim, usually 3–4 cm under it. The carination itself is very fine, barely visible. The part above the carination is not incurving, but straight, enclosing an obtuse angle with the lower part. These bowls usually have a thinning rim: 3/6 *(Fig. 17)*, 15/1 *(Fig. 60)*, 15/29 *(Fig. 64)*, 16/14 *(Fig. 71)*, 20/15 *(Fig. 101)* and 22/3 *(Fig. 107)*.

It would appear that this bowl type was more popular at Pityerdomb than on other contemporary Transdanubian sites, at least judging from the published finds. The surviving profiles suggest that this vessel can be assigned to the category of fine wares. This form appears sporadically on sites of the earliest Linear Pottery culture, such as Szentlőrinc,[33] Medina–Margitsziget[34] and Zalavár–Keleti-tanya.[35] It is lacking on the Starčevo sites of Transdanubia, indicating that is indeed an early Vinča form. Comparable "late Starčevo and Körös" profiles quoted by W. Schier from Vinkovci, Obrez, Golokut and Szarvas–Site 23 differ from the type described here since the carination lies further down the vessel body and the upper part is sometimes incurving. It is also noteworthy that the early Vinča types quoted as analogies include a pottery fragment from the eponymous Vinča–Belo Brdo site[36] that matches the profile of this bowl type. Similarly to W. Schier, Gh. Lazarovici too considers this type a Vinča A1 form.[37]

It is hardly surprising, then, that bowls with a similar rim have been found on the more southerly and easterly Starčevo sites. According to K. Minichreiter's typological table, this bowl represent

[20] *Kalicz* (1990) Fig. 21/3.
[21] *Kalicz* (1990) Fig. 27/3, 6.
[22] *Dimitrijević* (1969a) Fig. 5/9, 11.
[23] *Petrović* (1986–87) Fig. 3/20.
[24] *Kalicz* (1990) Fig. 33/5.
[25] *H. Simon* (1996) Fig. 6/1, Fig. 14/7.
[26] *Gläser* (1994) Fig. 252/3, 6, 8, 12.
[27] *Gläser* (1994) Fig. 31/1., Fig. 32/1, 3.
[28] *Gläser* (1994) Fig. 167/2, 4, 5.
[29] *Makkay* (1978) Fig. 11/8, Fig. 20/5.
[30] *Kalicz-Schreiber–Kalicz* (1992) Fig. 6/6a, 9c.
[31] *Lenneis* (1989) Fig. 5/1.
[32] *Pavúk* (1980) Fig. 8/3–4, Fig. 18/2; *Pavlů–Vokolek* (1996) Fig. 11/27.
[33] *Kalicz* (1980) Fig. 11/3; *Gläser* (1994) Fig. 253/3.
[34] *Kalicz* 1988 Fig. 26/10. The pottery sherd published by *Kalicz–Makkay* (1972a) Fig. 5 is more or less similar, but its upper part is longer. I have not assigned this type, fairly common in the early Linear Pottery phase, to this category.
[35] *Gläser* (1994) Fig. 253/3.
[36] *Schier* (1997) Fig. 1, for its parallel from Vinča cp. Fig. 1/11.
[37] A similar vessel, dated to the Vinča A1 period, has been published from Gornea–Caunița de Sus. *Lazarovici* (1977a) *Fig.* 50/10.

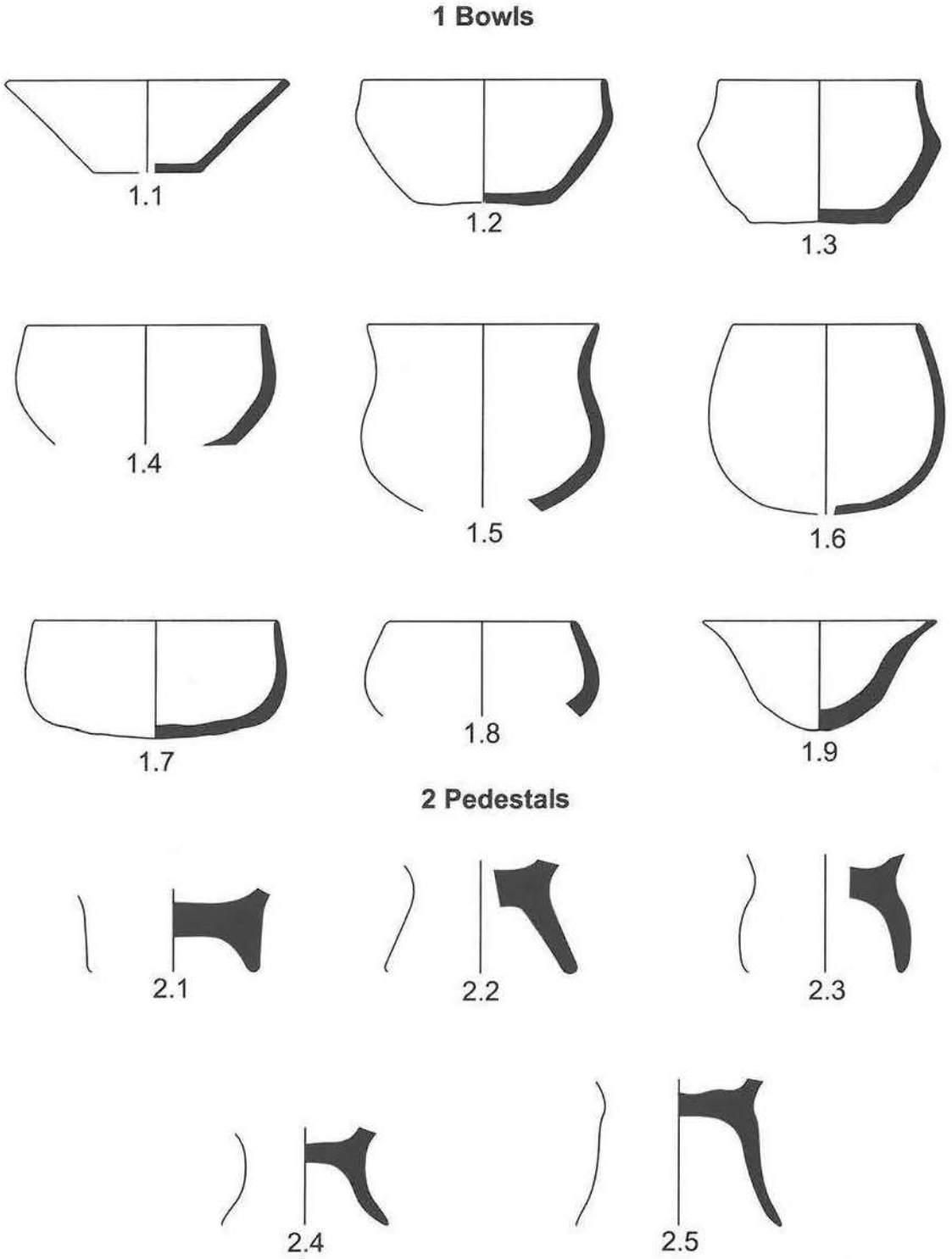


Fig. 138. Typological chart

a sub-variant that only appears in the latest, Spiraloid B phase of the Starčevo culture in northern Croatia.[38] The vessel form has been reported from several Slavonian settlements, such as the May 1 road[39] and the Marketplace[40] sites in Vinkovci. The type has also been found in more easterly areas, but exclusively in Starčevo IV contexts, corresponding to the latest Starčevo period. Bowls with this type of rim from the late Criş–Starčevo period have been reported from several sites in the Maros valley,[41] from Fratelia[42] and from other Vinča A settlements in the Banat assigned to the Starčevo IIIb–IV phase.[43]

1.3. Biconical bowl with a concave upper part

With the exception of type 1.2, this is the other biconical vessel type occurring at Pityerdomb (– in other words, bowls carinated about half-way up the vessel height with small knobs set on the carination, one of the dominant bowl types in the early Linear Pottery assemblages from Transdanubia, Slovakia and Lower Austria,[44] are entirely lacking in the Pityerdomb assemblage). Interestingly enough, this form is also absent from among the abundant pottery fragments published from Budapest–Aranyhegyi út-Mocsáros.[45] At Pityerdomb this type dominates the biconical vessel types. A variant with a less strongly incurving upper part also occurs among the finds (3/1, *Fig. 17),* although the most characteristic form has a strongly incurving upper part and a thinning rim: 4/3 *(Fig. 21),* 9/1, 9 *(Fig. 28),* 9/3, 5–6 *(Fig. 29),* 11/19 *(Fig. 38),* 12/18–19 *(Fig. 52),* 17/1 *(Fig. 82),* 22/6 *(Fig. 108),* 24/4 *(Fig. 110)* and 27/5 *(Fig. 119).* A similar, incurving upper part can be noted on fragment 19/25, but on this piece the carination is rounded *(Fig. 94).*

This bowl type occurs in the late Starčevo assemblages from Vinkovci–Marketplace and Vinkovci–May 1 Road[46] south of Transdanubia, and it has been reported from Becsehely I[47] and Kaposvár–Deseda[48] north of the Drava. A comparable fragment is known from Vörs in the Little Balaton region, where it was found together with late Starčevo finds,[49] and similar bowl fragments have also been recovered from early Linear Pottery sites in the same region, such as Sármellék,[50] Zalavár–Keleti-tanya,[51] Andrásháza–Gébárti-tó II[52] and Révfülöp.[53] Bowl fragments with a more or less identical profile have been reported from Medina[54] and Szentlőrinc[55] in Baranya county, lying south of Lake Balaton.

It would appear that this vessel type spread to the Little Hungarian Plain and farther west along the Danube through the valleys of western Transdanubia. They appear among the earliest Linear Pottery finds of the Nyitra Basin,[56] among the finds from Strögen[57] and the assemblage from Holohlavy,[58] a site dating to the same period in Bohemia.

[38] *Minichreiter* (1992a) Fig. 25.
[39] *Dimitrijević* (1969a) Fig. 4/6.
[40] *Dimitrijević* (1969a) Fig. 6/2.
[41] *Draşovean* (1981) 40 (typological chart).
[42] *Lazarovici* (1985) Fig. 5/6.
[43] *Lazarovici* (1977b) Fig. 35 (typological chart).
[44] *Kalicz–Makkay* (1975) Fig. 23; *Kalicz* (1978–79) Fig. 4/5; *Lenneis* (1995) Fig. 3/a–b; *Pavúk* (1994) Fig. 5/3.
[45] *Kalicz* (1993) 29–34; *Kalicz-Schreiber–Kalicz* (1992) 2–12; *Kalicz* (1988) Figs 34–54.
[46] *Dimitrijević* (1969a) Fig. 5/5, 12, 13, Fig. 6/1, 3, 8 and Fig. 4/4.
[47] *Kalicz* (1990) Fig. 43/8, 9, 11.
[48] *Kalicz* (1990) Fig. 43/11 (recte, 10).
[49] *Kalicz–M. Virág –T. Biró* (1998) Fig. 5a/2, 4, 6.
[50] *Kalicz* (1978–79) Fig. 10/1–2, 4.
[51] *Gläser* (1994) Fig. 251/1–2, 4, 7, Fig. 252/9–11, Fig. 253/4.
[52] *H. Simon* (2002).
[53] *Kalicz* (1978–79) Fig. 8/7.
[54] *Kalicz* (1988) Fig. 26/9.
[55] *Gläser* (1994) Fig. 236/9.
[56] *Pavúk* (1980) Fig. 11/3, 7–8, 12.
[57] *Lenneis* (2001 [2002]) 29.
[58] *Pavlů–Vokolek* (1992) Fig. 19/5.

1.4. Bowl with a rounded carination and a slightly indrawn or cylindrical rim

This bowl type is rather frequent at Pityerdomb and also among the finds from late Starčevo and early Linear Pottery sites, although slight differences can be observed in the profile: for example the extent to which the carination is rounded. The sub-variant with a less emphatically rounded carination resembles the profile of biconical bowls. The rim described as cylindrical is sometimes so short as to be more aptly described as an articulated rim among finds from other contemporary Transdanubian sites (although never at Pityerdomb). While in the case of other bowl fragments there is little evidence for the actual bowl types set on pedestals, in the case of this type a pedestalled variant is quite certain (e.g. fragment 17/14, *Fig. 82*). The pottery fragments representing this bowl type are the following: 2/10 *(Fig. 13)*, 7/1 *(Fig. 23)*, 11/20 *(Fig. 38)*, 11/53 *(Fig. 43)*, 11/54 *(Fig. 44)*, 12/15 *(Fig. 51)*, 15/16 *(Fig. 62)*, 15/27 *(Fig. 63)*, 18/1 *(Fig. 87)*, 19/20 *(Fig. 92)*, 22/5 *(Fig. 107)*, 24/2 *(Fig. 110)*, 27/9, 17 *(Fig. 120)*, 29/12 *(Fig. 126)*, and 30/12, 15 *(Fig. 131)*.

The earliest occurrence of this bowl type can be dated to the classical, Linear B phase of the Starčevo culture: several fragments are known from Lánycsók[59] and a comparable bowl has also been found at Barcs.[60] The bowl type remained in use during the late, Spiraloid B phase, as shown by finds from the Srem: Golokut[61] and Vinkovci–May 1 Road,[62] both from late Starčevo contexts. North of the Drava, one can already quote four late Starčevo sites whose finds include this bowl type: Becsehely I,[63] Kaposvár–Deseda,[64] the reccently excavated and published Babarc site[65] lying near Lánycsók, and Vörs–Máriaasszonysziget.[66] The same rounded carination can be noted on a few bowls from the earliest Linear Pottery sites in Transdanubia, such as Szentlőrinc in Baranya county,[67] Sé in Vas county, Sármellék–Égenföld[68] and Garabonc–Ófalu,[69] lying in the Little Balaton region. A similar vessel was found at Szigetszentmiklós–Vízműtelep and some vessels of this type were published from Budapest–Aranyhegyi Road-Mocsáros.[70] A variant with a slightly less rounded carination can be quoted from the finds brought to light at Bicske–Galagonyás[71] and Medina,[72] where two fragments came from a pedestalled bowl.[73] On the testimony of the pottery finds from Oberravelsbach and Sommerein[74] and, more recently, from Strögen,[75] the variant with the gentler, more rounded carination also reached Lower Austria.

1.5. Bowl with an S profile

This bowl variant, often very finely made, also has a thinning rim; in some publications it is described as a chalice. Indeed, three of the five fragments in this category came from pedestalled bowls: 9/17 *(Fig. 30)*, 20/12 *(Fig. 100)* and 25/1 *(Fig. 114)*; the two other fragments are 19/19 *(Fig. 92)* and 31/8 *(Fig. 134)*.

[59] *Kalicz* (1990) Fig. 14/9, 14, Fig. 15/11.
[60] *Kalicz* (1990) Fig. 28/4.
[61] *Petrović* (1986–87) Fig. 3/6–7; *idem* (1990) Fig. 1/8.
[62] *Dimitrijević* (1969a) Fig. 3/8, Fig. 4/7.
[63] *Kalicz* (1988) Fig. 17/8b.
[64] *Kalicz* (1990) Fig. 31/4, 9, Fig. 33/1.
[65] *Bánffy* (2001) Fig. 1/2.
[66] *Kalicz–M. Virág–T. Biró* (1998) Fig. 7/1–2, 4.
[67] *Kalicz* (1980) Fig. 11/14; Gläser (1994) Fig. 235/5.
[68] *Gläser* (1994) Fig. 210/3, Fig. 211/1, 4.
[69] *M. Virág* (1989) Fig 1. As far as I know, only one single pit was uncovered at this site. However, R. Gläser also mentions a later, Keszthely type sherd from this site (*Gläser* [1994] Fig. 85/16–18). Although it is quite possible that the pit dates from a later period, the Garabonc vessel can nonetheless be assigned to the earliest phase of the Linear Pottery culture.
[70] *M. Virág* (1992) Fig. 16; *Kalicz-Schreiber–Kalicz* (1992) Fig. 5/14, 16.
[71] *Makkay* (1978) Fig. 6/4, 1; cp. Fig. 4/3 and Fig. 5/1 for variants with knobs on the carination.
[72] *Kalicz–Makkay* (1975) Fig. 23/1, 4; *Gläser* (1994) Fig. 166/15.
[73] *Gläser* (1994) Fig. 165/5–6.
[74] *Lenneis* (1989) Fig. 3/1 and Fig. 4/3–5.
[75] *Lenneis* (2001 [2002]) Fig. 22, Fig. 24.

Bowls with a gentle S profile were used since the Early Neolithic in the Balkans; bowls of this type were, for example, published from the Goljamo Delčevo site by H. Todorova who noted that this form was popular throughout the Karanovo I–II complex.[76] Its appearance at Lánycsók[77] indicates that it was already used during the early Starčevo phase in Transdanubia. Bowls with a comparable profile from this early period have been found at Vinkovci–Marketplace,[78] Kaposvár–Deseda[79] and Becsehely I,[80] as well as at Gellénháza–Városrét,[81] lying relatively near to Pityerdomb. Its survival into the earliest Linear Pottery horizon is indicated by the S profiled bowls found at Andráshida–Gébárti-tó,[82] Medina[83] and Budapest–Aranyhegyi Road-Mocsáros.[84]

1.6. Bomb shaped bowl

This bowl type is rather common at Pityerdomb. One fine example is 8/4 *(Fig. 26),* a vessel assembled and reconstructed from its fragments, decorated with a rain pattern of short stabs. This bowl form became a hallmark of the Linear Pottery cultures of Europe. The other fragments representing this bowl are the following: 2/1 *(Fig. 11),* 4/4 *(Fig. 21),* 15/25–26 (*Fig. 63,* the former with an articulated rim), 16/4, 6 (Fig. 68, also with an articulated rim), 13/7 *(Fig. 75),* 19/16 *(Fig. 91)* and 22/2 *(Fig. 108).*

One of the most typical vessels of the Linear Pottery cultures made its appearance during the Spiraloid phase of the Starčevo culture,[85] becoming truly widespread and popular during the Spiraloid B phase,[86] and the corresponding late Körös–Criş and Vinča A phase in the Balkanic culture province.[87] This vessel type has been found in late Körös and early Alföld Linear Pottery (Szatmár II) contexts, as at Kőtelek–Huszársarok, Füzesabony–Gubakút and Mezőkövesd–Szentistván-Mocsolyás.[88] It is known from the late assemblages of Golokut[89] in the Srem, while in Slavonia it has been reported from the late Starčevo sites investigated at Vinkovci.[90] In Transdanubia, fragments from comparable vessels have been found at Kaposvár–Deseda[91] and, more recently, at Babarc.[92]

It is hardly surprising that this bowl type is fairly common among the finds of the early Transdanubian Linear Pottery horizon. It occurs in the assemblages recovered from Bicske[93] and Budapest–Aranyhegyi Road-Mocsáros,[94] as well as among the finds from Barcs[95] and Medina[96] in southern Transdanubia. In the Balaton region, comparable bowls have been reported from Vonyarcvashegy[97] and Zalavár–Keleti-tanya.[98] The type occurs in most Central European Linear Pottery assemblages, such as the one from the eponymous site of Bíňa (Bény)[99] in Slovakia. The reason for its popularity is unknown – it is possible that it became so widespread because it was modelled on a prototype originally made from organic material.

[76] *Todorova* (1989) Fig 1, top.
[77] *Kalicz* (1990) Fig. 16/1.
[78] *Dimitrijević* (1969a) Fig. 3/9.
[79] *Kalicz* (1990) Fig. 34/1.
[80] *Kalicz* (1990) Fig. 43/9b.
[81] *H. Simon* (1996) Fig. 5/1, Fig. 9/6.
[82] *Horváth–H. Simon* (1997) Fig. 2/2.
[83] *Kalicz* (1988) Fig. 26/16a.
[84] *Kalicz-Schreiber–Kalicz* (1992) Fig. 4/2; *Kalicz* (1988) Fig. 42/4.
[85] *Dimitrijević* (1969a) 47.
[86] *Raczky* (1983) 177; *H. Simon* (1996) 62.
[87] *Lazarovici* (1979) Fig. 13c/10–11 (Vinča A1 types), Moldova Veche; *idem* (1993) Fig. 2/6.
[88] *Raczky* (1983) Fig. 19/1; *Domboróczki* (1997) Catalogue Fig. 1/35, 53; *Kalicz–Koós* (1997a) Fig. 2/53; *eadem* (1997b) Fig. 8, top centre.
[89] *Petrović* (1986–87) Fig. 3/3
[90] *Dimitrijević* (1969a) Fig. 3/7 (Vinkovci–Sandpit), Fig. 5/6 (Vinkovci–Marketplace).
[91] *Kalicz* (1990) Fig. 31/2–3, 8, Fig. 34/3.
[92] *Bánffy* (2001) Fig. 1/5.
[93] *Makkay* (1978) Fig. 18/17, Fig. 22/4–5.
[94] *Kalicz-Schreiber–Kalicz* (1992) Fig. 2/3, Fig. 5/3.
[95] *Kalicz* (1988) Fig. 55/14.
[96] *Kalicz* (1988) Fig. 27/14.
[97] *Kalicz* (1978–79) Fig. 9/4–5.
[98] *Gläser* (1994) Fig. 251/6.
[99] *Pavúk* (1980) Fig. 7/3, 10–11, Fig. 23/7.

1.7. Hemispherical bowl

Two variants of this bowl type could be distinguished at Pityerdomb: one with a cylindrical rim, the other with an outturned rim. It seemed unnecessary to assign them to separate categories since their other traits were identical. One of these was the globular base on pieces where the base also survived. A variant set on a pedestal or, better said, with a ring base is also known, not only from Pityerdomb (2/2, *Fig. 11;* 27/7, *Fig. 120*), but also from Gellénháza, where it was found together with late Starčevo finds.[100] The other fragments in this category are the following: 9/2 *(Fig. 29),* 12/14 *(Fig. 50),* 14/15 *(Fig. 58),* 16/1 *(Fig. 67),* 13/8 *(Fig. 76),* 18/2 *(Fig. 87),* 19/2 *(Fig. 89),* 19/35, 37 *(Fig. 96)* and 31/3 *(Fig. 133).*

This form can be observed in all phases of the Starčevo culture, occurring among the finds from Lánycsók,[101] assigned to the classical phase, as well as in the assemblages from Vinkovci–Marketplace[102] and Golokut–Vizić.[103] Other finds of this bowl type from Transdanubia include the ones from Barcs,[104] Becsehely I[105] and Gellénháza,[106] the latter yielding several other fragments in the addition to the one quoted above.

This bowl type was also popular in the early Transdanubian Linear Pottery. At Barcs, for example, it was found together with both Starčevo and Linear Pottery finds,[107] and several specimens have been reported from Szentlőrinc,[108] site near the Drava, as well as from Budapest–Aranyhegyi Road–Mocsáros and Bicske–Galagonyás.[109] Comparable pieces are known from Medina,[110] lying south of Lake Balaton, and from Becsehely II[111] and Sé[112] in western Transdanubia. More northwesterly sites where fragments of this bowl type have been found include Hurbanovo (Ógyalla) and Sommerein.[113] Similar bowls have been reported from Révfülöp, Sármellék–Égenföld[114] and Zalavár–Keleti-tanya,[115] all sites near the western shore of Lake Balaton.

1.8. Bowl with strongly indrawn rim

This bowl was the other *Leitform* of the Linear Pottery culture beside the bomb shaped vessel. Its profile is almost biconical, with the gentle, rounded carination lying practically halfway down the vessel. However, this vessel was fairly rare at Pityerdomb and in the assemblages from related western Transdanubian sites. The fragments representing this form are the following: 19/20 *(Fig. 92),* 4/1–2 *(Fig. 20),* 14/1–2 *(Fig. 56)* and 15/28 *(Fig.63).*

The type occurs among the Starčevo finds from Lánycsók, as well as among the late assemblages from Becsehely and Kaposvár–Deseda.[116] A variant with an articulated rim survived into the Transdanubian Linear Pottery culture, as shown by finds of this bowl from Budapest–Aranyhegyi Road–Mocsáros and Medina,[117] and it dominates the finds from Becsehely II, Bicske

[100] *H. Simon* (1996) Fig. 10/2.
[101] *Kalicz* (1990) 15, 10, Fig. 18/3–4, Fig. 21/8.
[102] *Dimitrijević* (1969) Fig. 10/8.
[103] *Petrović* (1986–87) Fig. 3/18–19.
[104] *Kalicz* (1990) Fig. 27/1, 4, 9.
[105] *Kalicz* (1990) Fig. 43/11a, Fig. 45/5.
[106] *H. Simon* (1996) Fig. 2/3, Fig. 9/4, Fig. 10/1, Fig. 14/8.
[107] *Kalicz* (1988) Fig. 55/1.
[108] *Gläser* (1990) Fig. 234/4; *Kalicz* (1980): Fig. 11/16; *Gläser* (1994) Fig. 236/3, 5.
[109] *Kalicz-Schreiber–Kalicz* (1992) Fig. 6/6b, 9c; *Makkay* (1978) Fig. 5/2–3, Fig. 16/2, Fig. 20/10, Fig. 20/7.
[110] *Kalicz* (1988) Fig. 26/18a-c; *Gläser* (1994) Fig. 167/1, 6.
[111] *Gläser* (1994) Fig. 31/2–7.
[112] *Kalicz* (1978–79) Fig. 12/8; *Gläser* (1994) Fig. 212/7, 10.
[113] *Pavúk* (1980) Fig. 17/5; *Lenneis* (1989) Fig. 4/4.
[114] *Kalicz* (1978–79) Fig. 8/6, Fig. 10/6; *Gläser* (1994) Fig. 209/8.
[115] *Gläser* (1994) Fig. 253/1–2, 5.
[116] *Kalicz* (1990) Fig. 18/5, Fig. 43/6–7, Fig. 45/6, Fig. 44/8, the latter two with articulated rim.
[117] *Kalicz-Schreiber–Kalicz* (1992) Fig. 5/1, 3, 5; *Kalicz* (1988) Fig. 26/19–20.

and Barcs,[118] as well as the early Linear Pottery assemblages from southwestern Slovakia and Lower Austria.[119]

Similarly to Pityerdomb, this bowl type is rather rare, represented by a few fragments or none at all, among the finds from sites in the Balaton region. Only two pottery sherds can be assigned to this type from the assemblages recovered from Zalavár, Sármellék, Révfülöp, Vonyarcvashegy and Balatonszepezd,[120] suggesting that among the early Linear Pottery sites in Transdanubia, this type became a distinctive form on sites that cannot be assigned to the earliest Linear Pottery horizon and/or did not maintain close ties with the southerly Starčevo settlements. It seems likely that this vessel form reached Lower Austria with one of Linear Pottery groups producing Bicske–Becsehely type pottery that migrated toward the northwest along the Danube.

1.9. Bowl with the curved wall thickening toward the base

A rare, but very distinctive vessel form. In view of the thin rim, the strongly thickening walls and curved profile, it could be described as a tulip shaped vessel, were this label not reserved for the distinctive vessel form of another culture. Three fragments of this bowl were found at Pityerdomb: 16/2–3 *(Fig. 67)* and 21/11 *(Fig. 105)*.

The parallels to this bowl type are few and far between: comparable pieces have been found at the late Starčevo sites of Kaposvár–Deseda and Babarc,[121] as well as on the early Linear Pottery sites of Budapest–Aranyhegyi Road–Mocsáros and Bicske–Galagonyás.[122]

2. Pedestalled vessels (Fig. 138)

Pedestalled vessels were extremely popular in the Early Neolithic of South-East Europe and their use can be traced until the close of the Middle Copper Age in the Carpathian Basin. Since most pedestals were topped with some sort of bowl, it seems practical to discuss the different pedestal types after the bowls. In most cases, the fragments come from the juncture of the pedestal and the vessel; intact pedestals are rarely found. Only in a few cases could the bowl type set on the pedestal be defined, and it is therefore impossible to determine the bowl type(s) whose pedestalled variant was particularly popular at the Pityerdomb settlement. On the basis of the few fragments that allow a reconstruction of the bowl type, we may say that these included bowls with a rounded carination (17/4, *Fig. 82*), bowls with an S profile (9/17, *Fig. 30; 20/12, Fig. 100;* 25/1, *Fig. 114*) and, in one case, a hemispherical bowl (2/3, *Fig. 11*). Good analogies to the latter can be quoted from three Starčevo sites in Transdanubia: Harc–Nyanyapuszta, Becsehely I and Barcs.[123] Fragments from two biconical pedestalled bowls were found at Becsehely.[124]

2.1. Ring base

The fragment of a low, no more than 2–3 cm high conical or cylindrical pedestal was found in Feature 11 (11/26, *Fig. 40*) and in Feature 15 (15/12–14, *Fig. 61*). Two other low pedestals of this type were recovered from Feature 30 (30/9–10, *Fig. 130*).

[118] *Kalicz* (1988) Fig. 55/2, 5; *Gläser* (1994) Fig. 38/2; *Kalicz* (1978–79) Fig. 4/5.

[119] Bíňa: *Pavúk* (1980) Fig. 6/1–4, Fig. 7/12; Winden am See, Frauenhofen and Brunn II: *Lenneis* (1989) Figs. 1–2; *Stadler* (1999) and his kind personal communication. I would here like to thank him for the possibility to personally examine the finds several times.

[120] Zalavár–Keleti-tanya: *Gläser* (1994) Fig. 251/3, with sectioned rim; Balatonszepezd: *Kalicz* (1988) Fig. 28/5.

[121] *Kalicz* (1990) Fig. 34/1; *Bánffy* (2001) Fig. 5/6.

[122] *Kalicz-Schreiber–Kalicz* (1992) Fig. 6/2 (set on a pedestal); *Makkay* (1978) Fig. 14/8.

[123] *Kalicz* (1990) Fig. 43/4, Fig. 43/1–2, Fig. 26/11.

[124] *Kalicz* (1990) Fig. 46/14, 17.

This pedestalled vessel can be regarded as the hollow footed variant of vessels with a strongly profiled base. Its use practically ceased at the close of the Early Neolithic and can only be noted in the earlier Linear Pottery phase. In addition to sites in the Srem,[125] pedestals of this type have been found on several Starčevo sites in Transdanubia, such as Lánycsók, Barcs and Gellénháza.[126] A comparable fragment was found in association with early Linear Pottery finds at Hurbanovo (Ógyalla).[127]

2.2. Low, conical pedestal

The most common pedestal form at Pityerdomb was equally widespread among the finds of the later Starčevo culture and the early Linear Pottery. Judging from the Pityerdomb finds, the base of these pedestals ranged from thinner and tapering types to thicker, straight variants. The finds included nine pedestals of this type: 11/26 *(Fig. 40)*, 15/12–15 *(Fig. 61)*, 17/15 *(Fig. 83)*, 19/42 *(Fig. 96)*, 20/13 *(Fig. 100)* and 27/32 *(Fig. 121)*.

Comparable finds from the Spiraloid B phase of the Starčevo culture can quoted from Vinkovci–May 1 Road and Golokut–Vizić from the territory south of the Drava;[128] in Transdanubia, this pedestal type appears in the Linear B phase of the culture, as shown by the finds from Lánycsók, Dombóvár–Kapospart, Kaposvár–Deseda and Becsehely I.[129] Both the tapering and the straight variant of this pedestal has been found at Babarc.[130] Fragments of similar pedestals have been brought to light at Gellénháza and Vörs–Máriaasszonysziget.[131] A less conical, almost cylindrical variant of the type is known from the Dombovár–Kapospart site, representing a variety that is unknown at Pityerdomb and at other sites.

Similar pedestals of this type have been found on early Transdanubian Linear Pottery sites, such as Medina–Margitsziget, Révfülöp and Sármellék,[132] the one from the latter site being slightly more compact. This presence of this pedestal at Sármellék can perhaps be interpreted as reflecting early Vinča influences. The pedestal fragment recovered from Pit 1 of Kúp–Egyes north of Lake Balaton can also be assigned to the early Transdanubian Linear Pottery horizon, as can the specimen from Bíňa (Bény) in the Nyitra basin.[133]

2.3. Low, flaring pedestal

Although this pedestal type is rather infrequent at Pityerdomb – only two fragments were found: 12/8 *(Fig. 49)* and 14/17 *(Fig. 58)* – it occurs among the finds of almost all Transdanubian sites of the late Starčevo culture. The low, flaring pedestal thins towards the base. Fragments of this pedestal type have been found at Dombóvár–Kapospart, Babarc, Becsehely I, Vörs–Máriaasszonysziget and Gellénháza.[134]

[125] Golokut–Vizić: *Petrović* (1986–87) Fig. 1/10–11.
[126] *Kalicz* (1990) Fig. 17/18–19, 21, Fig. 29/11; *H. Simon* (1996) Fig. 2/7, Fig. 3/6.
[127] *Pavúk* (1980) Fig. 17/7.
[128] *Dimitrijević* (1969a) Fig. 4/5; *Petrović* (1986–87) Fig. 1/9.
[129] *Kalicz* (1990) Fig. 17/15, Fig. 41/10, Fig. 33/2–3, Fig. 34/5, Fig. 45/17a.
[130] *Bánffy* (2001) Fig. 5/13, 16, 18.
[131] *H. Simon* (1996) Fig. 4/8; *Kalicz–M. Virág–T. Biró* (1998) Fig. 5b/9.
[132] *Kalicz–Makkay* (1972a) Figs. 1, 3, 6; *Kalicz* (1978–79) Fig. 8/5, 9; *Gläser* (1994) Fig. 200/7; *Kalicz* (1978–79) Fig. 10/5.
[133] *Gläser–Regenye* (1989) Fig. 5/13–14; *Pavúk* (1980) Fig. 12/3.
[134] *Kalicz* (1990) Fig. 41/7–9; *Bánffy* (2001) Fig. 3/11, Fig. 5/15; *Kalicz* (1990) Fig. 45/17b; *Kalicz–M. Virág–T. Biró* (1998) Fig. 5b/7; *H. Simon* (1996) Fig. 9/8.

2.4. Low, incurving pedestal

Another rare variant, occurring infrequently both during the late Starčevo and the early Linear Pottery period. Three pedestals of this type were found at Pityerdomb: 2/13 *(Fig. 14)*, 11/28 *(Fig. 40)* and 19/41 *(Fig. 96)*. Comparable pedestals have been reported from the Starčevo settlement at Barcs, as well as from sites to the north and west, at Bíňa (Bény) and at Prellenkirchen near Lake Fertő.[135]

2.5. High, incurving pedestal

This pedestal type is rare in Starčevo contexts, occurring only in the late phase of the culture. In contrast, its was quite widespread in the Linear Pottery culture, with the pedestal becoming higher in the later phase. Fragments of five such pedestals were found at Pityerdomb: 11/29 *(Fig. 40)*, 11/35 *(Fig. 42)*, 12/9 *(Fig. 49)*, 19/29 *(Fig. 94)* and 29/3 *(Fig. 127)*. In Slavonia, the single comparable piece comes from the Vinkovci–Marketplace site; another piece is known from Gellénháza–Városrét,[136] lying much closer also regarding its contacts to the Pityerdomb settlement. Other specimens were found in early Linear Pottery contexts in Transdanubia and southwest Slovakia: Szentlőrinc in the south, Bicske–Galagonyás and Budapest–Aranyhegyi Road–Mocsáros north of Lake Balaton,[137] Hurbanovo and Bíňa in Slovakia.[138] The more solid form of the Bicske specimen perhaps reflects an early Vinča influence.

3. Cooking pots and storage jars (Fig. 139)

This group includes thick-walled vessels, often as large as storage bins. Since most of the finds were fragmentary, in many cases only the rim or the curve of the vessel's belly, the handle form or the base indicated that the fragment in question came from a storage jar. The smaller vessels in this category were labelled cooking pots since in spite of the variants, they often represented the same type as the storage jars, this being the reason that they are discussed together.

3.1. Storage jar with outturned rim

Most of these storage jars were thick-walled vessels, although some fragments were relatively thin-walled compared to their size. Most were less carefully made, a few had a smoothed surface and their rim diameter often exceeded 30 cm. Their height remains unknown since the finds did not include a complete vessel profile. These vessels usually had a globular or flattened ovoid belly. The fragments representing this type are the following: 2/15 *(Fig. 14)*, 11/21 *(Fig. 38)*, 12/12–13 *(Fig. 50)*, 14/3 *(Fig. 57)*, 13/5 *(Fig. 76)*, 13/10 *(Fig. 77)*, 29/1, 6, 10 *(Fig. 125)* and 31/7 *(Fig. 133)*.

In Transdanubia, storage jars with a slightly or strongly outturned rim became more widespread from the Linear B phase of the Starčevo culture, as shown by the finds of this vessel type from Lánycsók, Barcs and Bóly.[139] It also occurs in the late Starčevo–early Linear Pottery assemblages west of Lake Balaton, such as the one from Gellénháza[140] and Zalavár.[141] This vessel type has

[135] *Kalicz* (1990) Fig. 29/11; *Pavúk* (1980) Fig. 12/2; *Ruttkay–Wessely–Wolff* (1986) Fig. 1/10.

[136] *Dimitrijević* (1969a) Fig. 3/9; *H. Simon* (1996) Fig. 13/12.

[137] *Kalicz* (1980) Fig. 11/9; *Gläser* (1994) Fig. 234/13; *Makkay* (1978) Fig. 25/3; *Kalicz-Schreiber–Kalicz* (1992) Fig. 6/7–8, 10–11, 13–14.

[138] *Pavúk* (1980) Fig. 17/4, Fig. 25/1–6.

[139] *Kalicz* (1990) Fig. 19/1–3, 6, 10–11, Fig. 20/3–4, 7, Fig. 30/4; Fig. 38/3–4, 6.

[140] *H. Simon* (1996) Fig. 4/7, Fig. 7/6.

[141] *Gläser* (1994) Fig. 249/1.

been reported from several sites of the Transdanubian Linear Pottery, including Becsehely II[142] and Bicske–Galagonyás,[143] as well as Pit 1 of Kúp–Egyes,[144] yielding a mixed assemblage that also contained early Linear Pottery finds. The vessel is a rather common form and therefore of little dating value; neither can any conclusions be drawn from its distribution.

3.2. Storage jar with cylindrical neck and ovoid body

This variant is considerably more rare than the type with outturned rim; in many cases, only the cylindrical rim has survived. Since all of the fragments from the cylindrical neck continued in a slightly curved shoulder, these fragments were also assigned to this category. It seems likely that some of these storage jars had a longish, flattened belly. The rim does not thin out, and neither were there fragments whose wall thickness was relatively thin compared to the vessel's size. The following rim and shoulder fragments can be assigned to this type: 2/7 *(Fig. 12),* 13/1 *(Fig. 75),* 13/31 *(Fig. 80)* and 29/5 *(Fig. 126);* only the cylindrical rim survived in the case of the following fragments: 15/30 *(Fig. 64),* 15/31 *(Fig. 65),* 19/39 *(Fig. 95)* and 31/2 *(Fig. 134).*

These storage jars can be found from the Starčevo–Criş III phase in the Serbian and Romanian Banat,[145] and it has also been reported from Golokut–Vizić in the Srem.[146] In Transdanubia, this variant appears during the Linear B phase, for example at Lánycsók and Szentlászló–Almáspatak, surviving into the late Starčevo phase, as shown by the finds from Kaposvár–Deseda.[147] Several fragments of this storage jar came to light at Gellénháza; these finds revealed that the ovoid shoulder continued in a longish, flattened belly.[148] Comparable finds have also been reported from Babarc, a late Starčevo site.[149] As regards the early Linear Pottery sites, a similar storage jar is known from Sé.[150]

3.3. Storage jar with indrawn rim

The rim fragments from these vessels have several variants, ranging from slightly to strongly indrawn rims. In two cases, the form of the rim was quite unusual, with the cylindrical neck under the rim continuing in a wide shoulder and a globular belly: 13/6 *(Fig. 76)* and 27/1 *(Fig. 118).* No traces of secondary burning could be noted on these two fragments, leading to the deformation of these sherds. This unusual storage jar was apparently the "invention" of one of the potters of the Pityerdomb settlement. Other fragments from storage jars of this type are the following: 2/6 *(Fig. 12),* 14/4 *(Fig. 56)* and 19/31, 36, 38 *(Fig. 95).* The variant with sectioned rim known from a contemporary assemblage from Vörs[151] has not been found at Pityerdomb. It seems likely that a globular body fragment (13/9, *Fig. 76*) too came from a vessel with an indrawn rim.

Similarly to the former type, this storage jar too appeared in phase II of the Starčevo culture in the Banat;[152] there is evidence for its use in the Srem[153] and it has also been found on the Transdanubian sites of the Starčevo culture at Kaposvár–Deseda, Gellénháza and Vörs.[154] It occurs among the early Linear Pottery finds from Zalavár, as well as in the assemblages from Bicske–Galagonyás and Budapest–Aranyhegyi Road–Mocsáros,[155] indicating that the type survived into the Transdanubian Linear Pottery.

[142] *Kalicz* (1978–79) Fig. 30/4.
[143] *Gläser* (1994) Fig. 41/6.
[144] *Gläser–Regenye* (1989) Fig. 5/10.
[145] *Draşovean* (1981) 40.
[146] *Petrović* (1986–87) Fig. 1/3–5, 7.
[147] *Kalicz* (1990) Fig. 26/9, Fig. 18/2, Fig. 24/15, Fig. 39/1, Fig. 31.
[148] *H. Simon* (1996) Fig. 2/1, 5; Fig. 7/7, Fig. 11/4, Fig. 1/2.
[149] *Bánffy* (2001) Fig. 2/8.
[150] *Kalicz* (1978–79) Fig. 12/2, 4.
[151] *Kalicz–M. Virág–T. Biró* (1998) Fig. 6b/4.
[152] *Draşovean* (1981) 40.
[153] *Petrović* (1986–87) Fig. 2/3–5.
[154] *Kalicz* (1990) Fig. 31/8; *H. Simon* (1996) Fig. 8/1; *Kalicz–M. Virág–T. Biró* (1998) Fig. 6a/2.
[155] *Gläser* (1994) Fig. 249/4; *Makkay* (1978) Fig. 20/14; *Kalicz-Schreiber–Kalicz* (1992) Fig. 7/4.

3.4. Flask shaped storage jar

The fragments of two flask-like storage jars have been found at Pityerdomb: one has a gently curving neck, the other comes from a squatter vessel: 17/4 *(Fig. 85)* and 3/3 *(Fig. 18)*. In addition to good analogies from the south,[156] comparable pieces can also be quoted from Lánycsók and the late Starčevo site at Babarc.[157] Flasks of this type also occur among the early Linear Pottery assemblages from Transdanubia, such as the ones from Becsehely II,[158] Szentlőrinc–Téglagyár[159] and Budapest–Aranyhegyi Road–Mocsáros,[160] as well as the mixed assemblage from Pit 1 of Kúp–Egyes that also contained early Linear Pottery finds[161] and the finds from Tapolca[162] that can most likely be assigned to the Zalavár–Sármellék–Vonyarcvashegy–Andráshida horizon.

3.5. Vessels the size of cooking pots

All of the above described storage jar types occur among the vessels that can be categorized as cooking pots. The only difference is one of size: the rim diameter of the vessels in this category is smaller (26–28 cm). They were often provided with large, protruding lug handles (2/21, *Fig. 15*) or large, perforated handles (31/12, *Fig. 135*). The other fragments assigned to this group are the following: 14/13 *(Fig. 58)*, 13/2 *(Fig. 76)*, 13/11, 13 *(Fig. 78)* and 20/5, 8 *(Fig. 99)*.

In her evaluation of the pottery finds from Gellénháza, Katalin H. Simon noted that the main difference between storage jars and cooking pots was their size.[163] Comparable vessels are known from late Starčevo settlements in Slavonia and the Srem, from Vinkovci–Marketplace, Vinkovci–May 1 Road and Golokut–Vizić.[164] Pottery fragments from cooking pots can be found in many early Transdanubian Linear Pottery assemblages, such as the ones from Budapest–Aranyhegyi Road–Mocsáros,[165] and Sommerein and Wullendorf[166] in Lower Austria.

3.6. Pannier shaped vessel (?)

The exact form of this vessel could not be reconstructed on the basis of its fragments found at Pityerdomb. Although the most distinctive trait of this vessel type, the asymmetric body, could not be ascertained in the case of a single fragment, it nonetheless seems likely that this vessel was used at Pityerdomb. The many vessel handles in the ceramic assemblage include pieces that were set obliquely or vertically instead of horizontally, and we also know that vessels of this type were used both in the Criş culture and in the Transdanubian Starčevo culture.[167] They have been found at Gellénháza and Zalavár,[168] two settlement sites lying quite close to Pityerdomb. This vessel form survived in other areas of the early Linear Pottery distribution.[169]

[156] Golokut *Petrović* (1986–87) Fig. 3/1.
[157] *Kalicz* (1990) Fig. 16/3, 5; *Bánffy* (2001) Fig. 6/1.
[158] *Kalicz* (1978–79) Fig. 5/14.
[159] *Kalicz* (1980) Fig. 11/8; *Gläser* (1994) Fig. 234/12.
[160] *Kalicz-Schreiber–Kalicz* (1992) Fig. 6/1, Fig. 12/9.
[161] *Gläser–Regenye* (1989) Fig. 5/8.
[162] *Sági–Törőcsik* (1989) Fig. 7.
[163] *H. Simon* (1996) 64 and Fig. 2/5, Fig. 4/1, Fig. 9/1, Fig. 10/9, Fig. 11/1, 3, 5.
[164] *Dimitrijević* (1969a) Fig. 3/1, Fig. 4/3; *Petrović* (1986–87) Fig. 2/1–2, 10.
[165] *Kalicz-Schreiber–Kalicz* (1992) Fig. 3/3, with a spiral meander.
[166] *Lenneis* (1989) Fig. 4/2, 1, Fig. 7/2.
[167] Sövényháza: *Kutzián* (1944) Fig. 11/1a-b; Hódmező-vásárhely–Kotacpart-Vata tanya, Kopáncs–Zoldos-tanya and Óbessenyő (Beşenova Veche): *Kutzián* (1944) Fig. 25, Fig. 26/2; Csóka (Čoka): *Kutzián* (1944) Fig. 49/1, Fig. 50/5; Lánycsók: *Kalicz* (1990) Fig. 12/10; Dombóvár–Kapospart: *Kalicz* (1990) Fig. 44/4a-c.
[168] *H. Simon* (1996) Fig. 12/2, 5; *Gläser* (1994) Fig. 249/3.
[169] Mohelnice: *Tichý* (1960) Fig. 21/5–6; Hurbanovo: *Pavúk* (1976) Fig. 1/7.

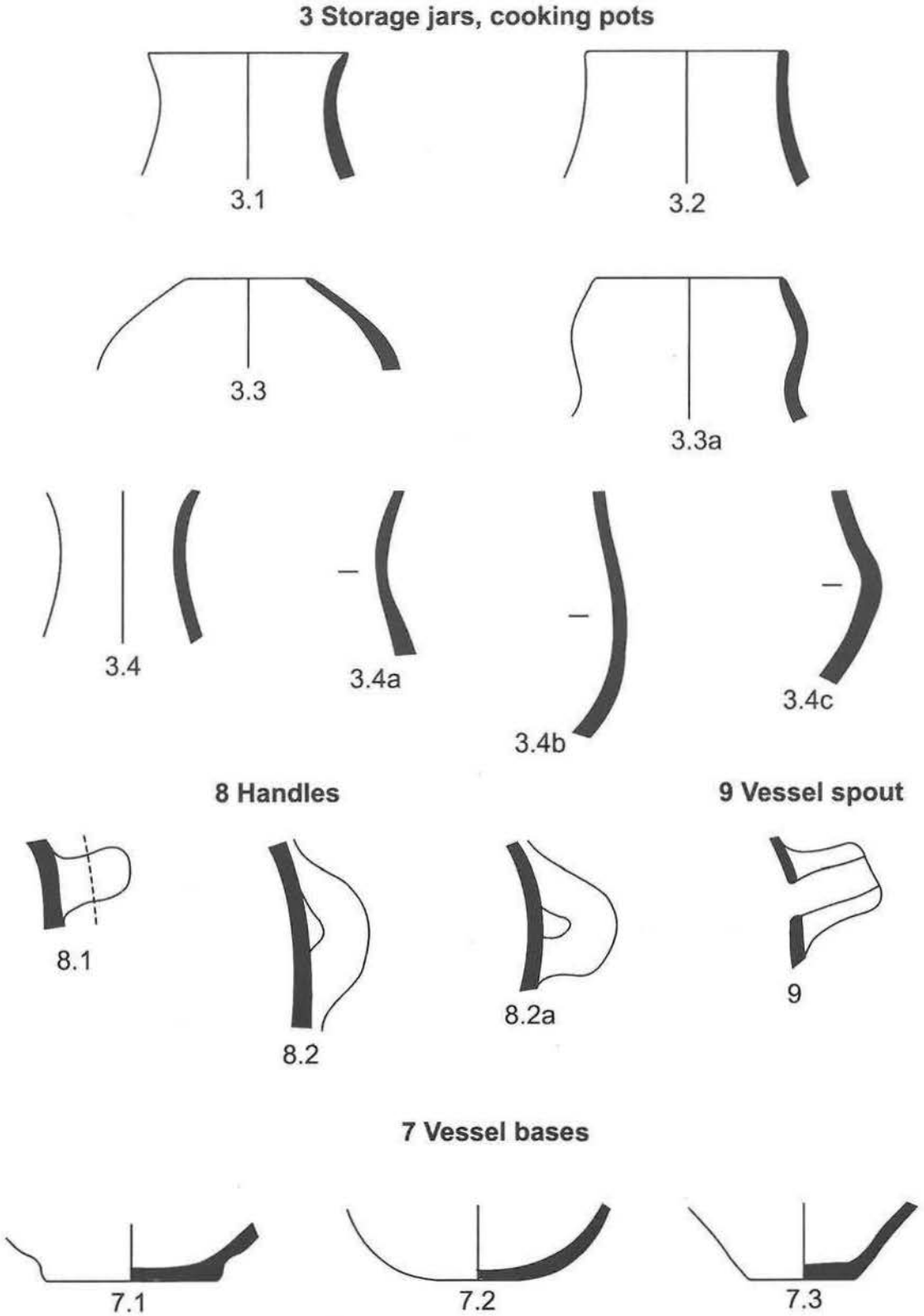


Fig. 139. Typological chart

4. Cups and mugs (Fig. 140)

These vessels are in many cases the smaller varieties of other types. The main criterion for assigning them to a separate category is that their rim diameter is smaller than 12 cm. In many cases, only their size distinguishes them from certain bowl types and some varieties do not have a counterpart among the larger vessels. It is still unclear whether there was a functional difference between smaller bowls and these cups and mugs.

4.1. Straight cup with rounded base

The four vessels assigned to this category were all rather carelessly made and they also include an amorphous specimen (the latter was not burnt secondarily). They are all decorated with a row of knobs on the belly: 8/2 *(Fig. 25)*, 8/5–6 *(Fig. 26)*, 27/8 *(Fig. 123)*. Comparable rounded cups are known from Zalavár–Keleti-tanya and Bicske–Galagonyás.[170]

4.2. Cup with indrawn rim

In contrast to the previous type, the single vessel profile that can be assigned to this category is one of the most finely made vessels from Pityerdomb: the thick-walled cup was covered with a dark red slip polished to perfection (29/4, *Fig. 126*). An analogous find from Medina was less carefully made and a similar cup from Budapest–Aranyhegyi Road–Mocsáros was covered with a barbotine ornament.[171] A similar, late Starčevo cup from Becsehely I differs only in that its rim is sectioned, while a specimen from Vörs–Máriaasszonysziget is slightly more biconical in profile.[172]

4.3. Biconical cup with incurving upper part

A vessel resembling a bowl as regards its form, but with a smaller rim diameter. Although the bowl type was rather popular at Pityerdomb, only one single fragment represent its smaller, cup-size variety (19/4, *Fig. 89*). Comparable vessels can be quoted from Golokut–Vizić and Szentlőrinc.[173] A close analogy to the latter was found at Vörs.[174] R. Gläser assigned this cup, a stray find, to the Transdanubian Linear Pottery on the basis of its incised linear ornament. However, it is equally possible that similarly to other pottery sherds ornamented with a linear pattern – such as the ones found at the late Starčevo site of Vörs–Máriaasszonysziget – this cup dates from the late Starčevo period and that its findspot is identical with the Vörs–Máriaasszonysziget site excavated by N. Kalicz and his colleagues. This possibility is supported by the fact that similar cups ornamented with a linear pattern have also been found in a late Starčevo context at Gellénháza.[175]

Three small cups, one with an incurving upper part,[176] can perhaps be assigned to the Szatmár II phase of the Alföld Linear Pottery. The find circumstances and contexts of these cups are unknown; only so much is known that they came to light in the Subalyuk Cave at Cserépfalu near Mezőkövesd during Ottokár Kadić's excavations in the 1930s. It is my impression that J. Lichardus

[170] *Gläser* (1994) Fig. 252/4–5, 7; *Makkay* (1978) Fig. 3/5.

[171] *Kalicz* (1988) Fig. 27/10; *Kalicz-Schreiber–Kalicz* (1992) Fig. 27/10.

[172] *Kalicz* (1990) Fig. 44/1; *Kalicz–M. Virág–T. Biró* (1998) Fig. 5a/3.

[173] *Petrović* (1986–87) Fig. 1/8; *Kalicz* (1980) Fig. 11/1; *Gläser* (1994) Fig. 236/2.

[174] Keszthely, Balaton Museum, inv. no. 70.179.7.

[175] *H. Simon* (1996) Fig. 3/4. Simon later regarded this pottery fragment "intrusive" owing to its linear decoration. It is my belief, however, that the linear ornamentation does not in itself imply a date after the Starčevo culture, especially in view of the linear ornamented sherds found in late Starčevo contexts.

[176] *Korek–Patay* (1958) Fig. 17, bottom centre.

misunderstood Korek and Patay's description (published in Hungarian), for he considered the cups to have been grave goods.[177] J. Korek and P. Patay quoted Kadić, who claimed that the three cups had been found in a humus layer mixed with limestone rubble and bones overlying the Pleistocene sediment.[178]

One interesting variant of this cup type is represented by two fragments from biconical bowls whose upper and lower part were both slightly incurving: 16/7 *(Fig. 68)* and 17/2 *(Fig. 82)*. Yet a third fragment has a strongly incurving wall both above and below the carination (24/6, *Fig. 111*). This latter cup may in fact have been a suspension vessel, even though the fragment is not perforated. The profile of the small suspension vessel too shows an incurving vessel wall both above and below the carination (11/55, *Fig. 44*).

4.4. Cup with slightly indrawn rim and sectioned base

This cup too lacks a larger counterpart among the bowls. One surviving profile, 19/26 *(Fig. 94)*, indicated that it is an independent type. The two other fragments were assigned to this category owing to the similar base form; it is unclear whether their rim was indrawn or not (17/9, *Fig. 83;* 19/26, *Fig. 94*). The most interesting feature of the surviving profile is the sharply profiled base and the straight rim.

Two comparable cups are known from Cîrcea, a settlement of the late Criş culture.[179] Gh. Lazarovici published a similar cup from the Gornea–Cauniţa de Sus site that he believed to be a settlement occupied by groups of both the Starčevo IV and the early Vinča culture.[180] Analogous finds can be mentioned from Vinkovci–May 1 Road and the Golokut–Vizić sites, both from late Starčevo contexts.[181] The fragments of two such cups have also been found at Gellénháza,[182] suggesting that a stray find from Vörs, initially dated to the Linear Pottery,[183] can – similarly to the Pityerdomb and Gellénháza sites – likewise be assigned to the Spiraloid B phase and that it perhaps comes from the Vörs–Máriaasszonysziget site. A similar cup has also been found at Frauenhofen in Lower Austria.[184]

4.5. Hemispherical cup

This variant is represented by a single rim and body fragment at Pityerdomb: 18/3 *(Fig. 87)*. It could be termed a saucer or shallow bowl if it were certain that its base was flat. Two similar fragments with the wall thickening towards the base are known from Becsehely II, although one of the fragments was from a vessel set on a pedestal.[185]

4.6. Cup with curved side

This is the variant of the bowl type described under 1.9. Only one single fragment can be assigned to this category: 29/7 *(Fig. 126)*. The same analogies can be quoted as in the case of its bowl counterpart. I have not found any similar, cup sized analogies.

[177] *Lichardus* (1972) 13.
[178] *Korek–Patay* (1958) 17.
[179] *Nica* (1977) Fig. 20/2–3.
[180] *Lazarovici* (1977b) Fig. 50/8.
[181] *Dimitrijević* (1969a) Fig. 4/7; *Petrović* (1986–87) Fig. 1/1, 17.
[182] *H. Simon* (1996) Fig. 1/11, Fig. 5/9.
[183] Keszthely, Balaton Museum, inv. no. 70. 179. 7–9. *Gläser* (1994) Fig. 244/1.
[184] *Lenneis* (1989) Fig. 5/2.
[185] *Kalicz* (1978–79) Fig. 4/2; cp. also *Gläser* (1994) Fig. 33/4.

5. Miniature vessels (Fig. 140)

Similarly to the cooking pots and cups, miniature vessels too can be assigned to several types, being the miniature copies of the vessels used by the occupants of the Pityerdomb settlements. Their modelling does not differ significantly from their large counterparts – some fragments come from carefully made vessels. Their function remains enigmatic: they may have been toys or small containers for spices, but they may equally well have been used in rituals.

5.1. Miniature vessel with an S profile

Two small body fragments from the vessel belly can be assigned to this category: 11/36 *(Fig. 41)* and 27/23 *(Fig. 121)*. A funnel mouth from a third small vessel perhaps also continued in a similarly gentle profile (27/22, *Fig. 121*). J. Petrović published a decorated miniature vessel from the late Starčevo period found at Golokut–Vizić, lying south of the Drava in the Srem;[186] a small vessel with a similar profile, but provided with a spout was found at Lánycsók.[187] The survival of the type into the late Starčevo phase is indicated by the small fragment found at Gellénháza–Városrét[188] in Transdanubia and the decorated vessel from Görgeteg in Somogy county, assigned to the earliest Linear Pottery phase.[189] The fragment of a similar vessel is known from Frauenhofen in Lower Austria.[190]

5.2. Biconical miniature vessel with incurving upper part

The miniature variant of the similar bowl type. Two fragments can be assigned here: 24/6 *(Fig. 111)* and 27/24 *(Fig. 121)*. I have not found any analogies among the miniature vessels from other sites; for general parallels cp. the section on the bowls under 1.3.

5.3. Miniature pedestal

The base diameter of one flaring pedestal was less than 5 cm: 24/11 *(Fig. 111)*. It is a miniature variant of the low, incurving pedestals (cp. section 2.4). The other fragment comes from the juncture of the pedestal and the bowl, and neither the form of the pedestal, nor of the bowl can be reconstructed (27/20, *Fig. 118*).

6. Suspension vessel

Two pottery fragments represent this vessel type: one can be assigned here with certainty, the other tentatively. Both fragments have already been quoted in the section on biconical bowls with incurving upper and lower part (4.3). One of these vessels could be assembled from its fragments: 11/55 *(Fig. 44)*. A small, pointed and perforated knob was set on the carination. The analogies to the vessel indicate that there were originally three such knobs for suspension. The other fragment too has strongly incurving walls above and below the carination and it probably also had three perforated knobs on the carination: 24/6 *(Fig. 111)*.

This vessel type was fairly widespread in the Balkanic Early Neolithic. A part of the analogies can be quoted from layer A of the Gradešnica settlement;[191] other parallels include a vessel from

[186] *Petrović* (1976) Fig. 2/4.
[187] *Kalicz* (1990) Fig. 12/2.
[188] *H. Simon* (1996) Fig. 9/2.
[189] *Kalicz* (1988) Fig. 28/1.
[190] *Lenneis* (1989) Fig. 5/4.
[191] *Nikolov* (1974) Fig. 2 and Fig. 9.

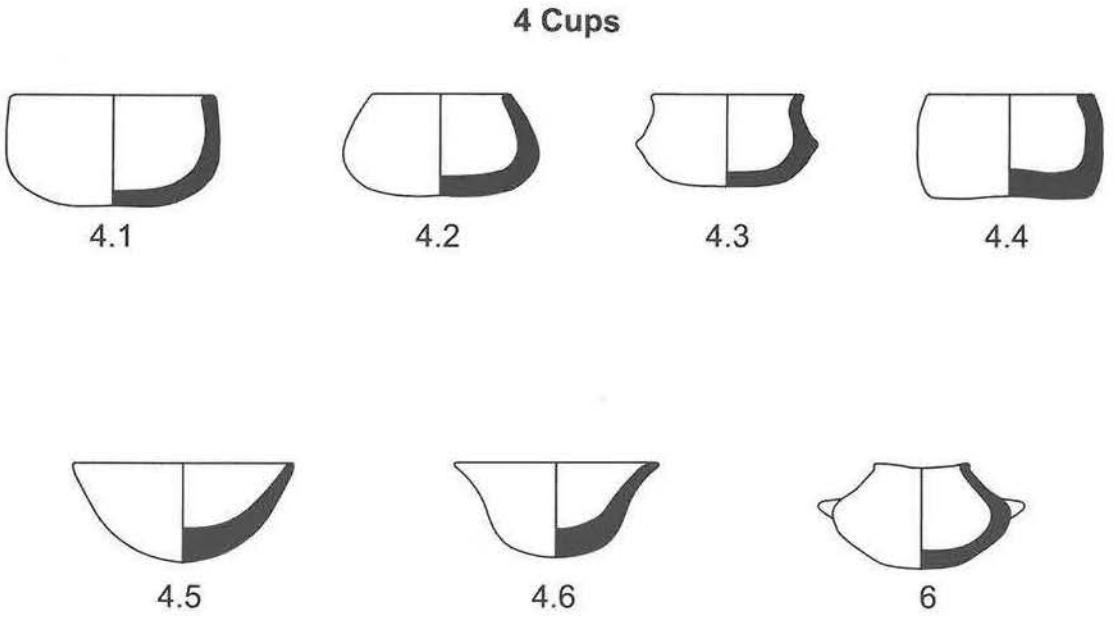


Fig. 140. Typological chart

phase 2b of the Criş culture published by Gh. Lazarovici[192] and a suspension vessel from Cîrcea–Viadukt II, dated to the same period.[193] A vessel of this type can be quoted from Zadubravlje in Slavonia,[194] as well as from Vinkovci–Marketplace.[195]

The finds from Lánycsók, the largest Starčevo assemblage from Transdanubia, also included a vessel of this type[196] and two comparable fragments have also been found at Gellénháza.[197] All three fragments have a rounded carination and small, horizontally set perforated knobs decorated the carination.

7. Vessel bases (Fig. 139)

The vessel types used by the occupants of the Pityerdomb settlement were reconstructed from the surviving fragments, primarily from the typical rim fragments and the vessel belly fragments. Complete vessel profiles with the vessel base are very rare. At the same time, the vessel base can also be important for determining vessel types, this being the reason that a separate section is devoted to the three most common base forms. All three types have precursors in the Starčevo culture; they became common during the latest, Spiraloid B phase of the culture and all three survived into the early Linear Pottery.

7.1. Strongly profiled base

This base form can be regarded as the solid variant of ring bases, at least on the basis of their height and in view of the fact that the similar vessel bases of the Körös and Starčevo culture are slightly incurving. At Pityerdomb, a wide range of vessels had bases of this type: 11/13 *(Fig. 36)* was part of the one of the largest storage jars found on the settlement, while fragments 17/9 *(Fig. 84)* and 27/19 *(Fig. 123)* came from small cups. Fragment 19/28 *(Fig. 94)* was part of a bowl, 26/2 *(Fig. 116)* came from a large storage jar and 27/16 *(Fig. 123)* also came from a larger vessel.

This base form was rather common in the Körös culture,[198] and it can also be documented in the classical phase of the Starčevo culture, both in Serbian Banat, for example at the Vršac (Versec)–At site,[199] and at the eponymous site of the culture in the Voivodina,[200] as well as on the Transylvanian sites of the culture.[201] Comparable finds from Golokut–Vizić in the Srem and Vinkovci–Marketplace in Slavonia reflect the survival of this form into the late Starčevo phase.[202] Good analogies can also be quoted from Osijek (Eszék)–Rétfala, dating to the classical or late Starčevo phase.[203] According to W. Schier's typological scheme, this form became widespread during the Spiraloid B phase.[204]

This base form was fairly widespread by the classical, Linear B phase in Transdanubia, as shown by the finds from Lánycsók, Szentlászló and Barcs;[205] comparable finds from Becsehely, Kaposvár–Deseda,[206] Babarc and Gellénháza[207] indicate that it remained popular during the late Starčevo period.

[192] *Lazarovici* (1983) Fig. 3.
[193] *Nica* (1977) Fig. 20.
[194] *Minichreiter* (1992c) Fig. 20/20.
[195] *Dimitrijević* (1969) Fig. 5/7.
[196] *Kalicz* (1990) Fig. 16/6.
[197] *H. Simon* (1996) 67, Fig. 3/2.
[198] *Kutzián* (1944) Pls 20–24.
[199] *Kalicz* (1988) Fig. 10/14.
[200] *Garašanin* (1979a) Fig. 17/2–5.
[201] *Maxim* (1999) 33 (typological chart).
[202] *Petrović* (1986–87) Fig. 1/13–16, 20; *Dimitrijević* (1969a) Fig. 5/9, 11, 13, 15.
[203] *Minichreiter* (1993a) Fig. 2, bottom and Fig. 3, top.
[204] *Schier* (1997) Fig. 1/3.
[205] *Kalicz* (1990) Fig. 23/6–8, 10, 12, 13, Fig. 39/7; *Kalicz* (1988) Fig. 15/4.
[206] *Kalicz* (1990) Fig. 33/4, Fig. 35/5, Fig. 17/2; *Bánffy* (2001) Fig. 1/9–10, Fig. 2/14, Fig. 4/17–19, Fig. 5/4, 17, Fig. 6/10–11; *H. Simon* (1996) Fig. 1/11, Fig. 2/8, Fig. 5/5, Fig. 8/5, Fig. 9/10, Fig. 10/7, Fig. 11/5, Fig. 12/2–5.
[207] *Bánffy* (2001) Fig. 1/9–10, Fig. 2/14, Fig. 4/17–19, Fig. 5/4, 17, Fig. 6/10–11; *H. Simon* (1996) Fig. 1/11, Fig. 2/8, Fig. 5/5, Fig. 8/5, Fig. 9/10, Fig. 10/7, Fig. 11/5, Fig. 12/2–5.

This base type survived in the Szatmár II assemblages as a legacy of the Körös period – for example among the finds from Kőtelek–Huszársarok[208] – and it can also be observed among the early Linear Pottery finds from Transdanubia, e.g. at Vonyarcvashegy.[209] J. Pavúk published a similar base from Nyitra, a site that in his view yielded some of the most archaic Linear Pottery vessel forms.[210]

7.2. Rounded base

Although a fairly common form at Pityerdomb, it is less frequent in assemblages from neighbouring Starčevo and early Linear Pottery sites. Rounded bases only became more widespread with the use of bomb shaped vessels in the later Linear Pottery period, represented by the Keszthely group in Transdanubia.[211] A wide range of vessels had a base of this type: fragments 2/8 *(Fig. 12)*, 11/4 *(Fig. 35)* and 14/6 *(Fig. 57)* came from large storage jars, fragments 3/6 *(Fig. 17)*, 12/10 *(Fig. 49)*, 19/18 *(Fig. 91)* and 24/14 *(Fig. 112)* from bowls, while fragments 8/2 *(Fig. 25)* and 27/8 *(Fig. 123)* from smaller cups.

Only one single comparable base is known from Lánycsók.[212] One of the bomb shaped vessels found at Vinkovci–Marketplace had a base of this type,[213] and an analogous base can also be quoted from Mezőkövesd–Szentistván-Mocsolyás, found in a Szatmár II context.[214]

7.3. Straight base

One of the most frequently occurring base types in the ceramic inventory from the Pityerdomb settlement. Fragments 2/2 *(Fig. 11)*, 7/12 *(Fig. 23)* 11/11 *(Fig. 35)*, 11/50, 52 *(Fig. 42)*, 12/11 *(Fig. 49)*, 12/16 *(Fig. 51)*, 15/32 *(Fig. 61)*, 13/32 *(Fig. 79)* and 17/8, 10 *(Fig. 83)* came from storage jars, fragments 12/7 *(Fig. 49)*, 15/16 *(Fig. 62)*, 16/12 *(Fig. 70)*, 16/14 *(Fig. 71)*, 13/34 *(Fig. 75)*, 13/33 *(Fig. 79)*, 17/7 *(Fig. 83)*, 19/27 *(Fig. 94)*, 20/15 *(Fig. 101)*, 26/1 *(Fig. 116)* and 27/18 *(Fig. 123)* came from bowls, while one fragment, 19/26 *(Fig. 94)*, was part of a small cup.

The fact that this base form occurs rarely in Starčevo assemblages and more frequently among early Linear Pottery finds probably reflects a general tendency in the development of pottery forms. A few base fragments of this type were found at Osijek (Eszék)–Rétfala and Vinkovci–Marketplace,[215] and in Transdanubia too, the form occurs among the finds from the late, Spiraloid B phase, as shown by the assemblages from Kaposvár–Deseda, Babarc, Gellénháza and Vörs–Máriaasszonysziget.[216]

This base type was popular in the early Linear Pottery as shown by the vessels of the Szatmár II group and the pottery finds from Transdanubia, as well as from the areas to its north and west. Vessels with a straight base can be quoted from Kőtelek–Huszársarok and Mezőkövesd–Szentistván-Mocsolyás on the fringes of the Great Hungarian Plain,[217] from Becsehely II and Szentlőrinc south of Lake Balaton,[218] from Bicske–Galagonyás and Budapest–Aranyhegyi Road–Mocsáros north of the lake,[219] from Bíňa (Bény) in southwestern Slovakia and from Oberravelsbach in Lower Austria.[220]

[208] *Raczky* (1983) Fig. 6/9–10, Fig. 7/7, 9, Fig. 24/6, 12.
[209] *Gläser* (1994) Fig. 243/11.
[210] *Pavúk* (1980) Fig. 4/10.
[211] *Kalicz* (1991).
[212] *Kalicz* (1990) Fig. 25/16.
[213] *Dimitrijević* (1969a) Fig. 5/6.
[214] *Kalicz–Koós* (1997b) Fig. 8, top, left.
[215] *Minichreiter* (1993b) Fig. 3, centre; *Dimitrijević* (1969a) Fig. 4/6, 8.
[216] *Kalicz* (1990) *Fig. 34/9; Bánffy* (2001) *Fig. 2/13; H. Simon* (1996) Fig. 3/4, Fig. 10/9; *Kalicz–M. Virág–T. Biró* (1998) Fig. 9b/16.
[217] *Raczky* (1983) Fig. 24/1–3, 10–11; *Kalicz–Koós* (1997b) Fig. 8., top, centre, Fig. 10, top.
[218] *Gläser* (1994) Fig. 33/6, Fig. 235/6.
[219] *Gläser* (1994) Fig. 37/6; *Kalicz-Schreiber–Kalicz* (1992) Fig. 7/11.
[220] *Pavúk* (1980) Fig. 10/6, 8, 11–13; *Lenneis* (1989) Fig. 3/2.

8. Vessel handles (Fig. 139)

In contrast to the ceramic inventory from the chronologically and geographically close sites showing a dominance of horizontally set handles, at Pityerdomb the proportion of vertically set handles was twice as high as of horizontally set ones. One part of the vertically set handles may have belonged to pannier shaped vessels, although this cannot be confirmed since few handles were found together with body sherds. What seems certain is that some of these handles were set on smaller vessels, perhaps cooking pots.

8.1. Horizontally set handles

Most of these handles come from storage jars. Two fragments, 13/10, 14 *(Fig. 77),* were definitely set on two sides of the belly. It is also possible that on some vessels there was a series of such handles on the belly (13/11, *Fig. 78*). Fragments 11/15, 17 *(Fig. 37),* 12/23 *(Fig. 53),* 15/8 *(Fig. 60),* 13/26 *(Fig. 80)* and 13/31 *(Fig. 80)* too come from storage jars. Fragment 21/8 *(Fig. 105)* has two perforations; a similar handle is known from the late Starčevo site at Obrez–Bastine.[221] One handle, 20/6 *(Fig. 99),* was decorated with a row of finger impressions.

Horizontally set handles were quite common east and south of Transdanubia, and widespread also in the Starčevo and early Linear Pottery culture of Transdanubia. The large handles with cylindrical section were usually set on two sides of the belly. A horizontal handle with deep furrows, resembling the ones from Pityerdomb, is known from the Vršac–At site in Yugoslavian Banat.[222]

8.2. Vertically set handles

In the lack of larger body fragments with this handle type, the best indication that a handle was set vertically is that the handle and/or the associated body fragments thickens downward. Luckily, the finds from Pityerdomb included a few larger vessel profiles on which the vertically set handle could be clearly made out. Fragments 11/16 *(Fig. 37)* and 12/25 *(Fig. 53)* thicken downward, the latter is decorated with three ribs. Similar ribbing ornaments fragments 27/38 *(Fig. 122)* and 24/9 *(Fig. 111).* One interesting decoration on these vertically set handles is that the juncture of the handle and the vessel body is emphasized with three finger impressions: 21/1 *(Fig. 103),* 27/35 *(Fig. 122),* 30/6 *(Fig. 129).* Other vertically set handles from storage jars or perhaps pannier shaped vessels are the following: 14/16 *(Fig. 58),* 15/9, 11 *(Fig. 61),* 13/24 *(Fig. 80),* 21/7, 9 *(Fig. 105),* 25/4 *(Fig. 114),* 27/36–37 *(Fig. 122),* 30/14, 18 *(Fig. 132)* and 31/12 *(Fig. 135).* Two of these handles come from smaller vessels, perhaps cooking pots: 20/5, 8 *(Fig. 99).*

Obliquely set handles can usually be found on pannier shaped vessels; however, as mentioned in the above, the presence of this vessel type in the ceramic inventory of the Pityerdomb site is uncertain. A vertically set handle has been published from Gellénháza,[223] and several such handles have also been found in an early Linear Pottery context at the Budapest–Aranyhegyi Road–Mocsáros site.[224]

9. Spouted vessel (Fig. 139)

One single fragment with a spout has been found: 30/19 *(Fig. 132).* It would seem that spouted vessels were fairly rare during this period since only two comparable pieces can be quoted from the classical and late Körös period and the corresponding Starčevo phases. One of these comes

[221] *Dimitrijević* (1974) Fig. 10/3.
[222] *Kalicz* (1988) Fig. 14/14.
[223] *H. Simon* (1996) Fig. 5/3.
[224] *Kalicz* (1988) Fig. 36/4–5, Fig. 48/10, Fig. 49/13.

from Vinkovci–Marketplace, the other from Lánycsók.[225] Spouted vessels were unknown during the entire Linear Pottery sequence in Transdanubia; in the Great Hungarian Plain, a few examples can be quoted from the Szatmár II period.[226] Spouts became popular in the late, Szakálhát group of the Alföld Linear Pottery.[227]

Unfortunately, only the spout survived and it is therefore unclear to which part of the vessel body the spout had been fitted. On the Vinkovci specimen, the spout was set near the base, while on the Lánycsók vessel it lay under the rim. In terms of size, the spouted vessel from Pityerdomb was probably the largest of the three; the specimen from Lánycsók was probably a small cup or mug, while the one from Vinkovci was also a small vessel, at least judging from its size relative to the storage jar beside it in the illustration (that unfortunately does not have a scale). The wall thickness and the size of the spout suggest that the Pityerdomb vessel was the size of a cooking pot or perhaps a storage jar. Its function remains enigmatic: while the two specimens of the Starčevo culture may have been used for child feeding, the one from Pityerdomb was too large and may perhaps have been used for pouring water or some other liquid.

10. Footed vessel (Fig. 140)

Four small fragments in the ceramic inventory can in all likelihood be interpreted as vessel feet (12/31–34, *Fig. 54*). Judging from their form and breakage surface, three came from the same vessel, while the fourth (12/34) was part of another one. The curved breakage surfaces suggest that the upper part was not horizontal, but rather a vessel of some sort. Although the three small, squat feet lay near each other, it is quite certain that they had broken off the vessel earlier. This is indicated by the fact that one of these clay feet was covered by a thick layer of black, pitch-like paint that dribbled down one side (cp. the section on black painting below). This small artefact was indeed suitable for use as a pintadera and it seems quite certain that it had been secondarily reused as a stamp after it had broken off the vessel.

It is possible that the fourth foot had not been part of a vessel. Its breakage surface is worn, but straight. It came to light together with the other three feet, suggesting that one of the occupants of the Pityerdomb settlement had probably set these fragments aside in order to re-use them, perhaps as pintaderas.

Vessels standing on feet are not typical in the Starčevo culture and their presence among the Pityerdomb finds is surprising. Footed vessels were quite common in the Körös culture, their popularity on par with pedestalled ones,[228] but they are almost entirely lacking in the Starčevo culture. N. Kalicz mentions a single vessel foot from this period, found at Lánycsók.[229] In the light of the above, one may even doubt whether these clay feet had indeed been parts of vessels – however, the finds also include another clay foot, part of an anthropomorphic vessel (cp. Chapter 6, the discussion of the cult finds). In other words, the use of footed vessels can be assumed on the Pityerdomb settlement.

It must here be noted that the footed vessel of the Körös culture survived into the early Alföld Linear Pottery.[230] In contrast, no such vessels have yet been found in the Transdanubian Linear

[225] *Dimitrijević* (1974) Fig. 18/12; *Kalicz* (1990) Fig. 12/2.

[226] *Raczky–Kovács–Anders* (1997) Fig. 163/44, showing a miniature spouted vessel.

[227] *Kalicz–Makkay* (1977) Fig. 154/5, Fig. 158/1–3, 5, Fig. 159/7.

[228] *Kutzián* (1944) Fig. 14/10–12, Fig. 25/4, Fig. 32/67, Fig. 33/11; *Kalicz–Raczky* (1980–81) Fig. 5, Fig. 6/3, Fig. 12/1, cp. also the type chart; *Kalicz* (2000) Fig. 3.

[229] *Kalicz* (1988) 52.

[230] Vessels of this type can be quoted from Kőtelek–Huszársarok: *Raczky* (1983) Fig. 16/9 and from among the early finds of the Tiszavalk–Négyes site: *Nagy* (1998) [1995–96] Fig. 24/6–9.

Pottery, most probably because this vessel type was also unknown in the Starčevo culture. The footed vessels of the Körös culture usually rested on three feet and it seems likely that the specimen from Pityerdomb too was set on three feet. A new perspective on possible contacts with the Körös communities advancing as far as the Kalocsa area in the late phase of the culture and the nature of these contacts can be expected from the research project whose goal includes the determination of the boundaries of the Körös and Starčevo distribution and the location of possible contact zones between these two cultures.

More distant analogies to the footed vessel include finds from Albania whose date, the beginning of the local Middle Neolithic, corresponds to that of the Pityerdomb settlement. The form of the Pityerdomb vessel feet resembles the slightly indented clay feet from Dunavec II, Cakran and Kolsh II.[231]

11. Vessel lid (?)

One of the more enigmatic clay finds from the Pityerdomb settlement can probably be interpreted as a lid (30/24, Fig. 132). This fragment came from a poorly levigated, well fired, red coloured, clay artefact with curved sides, tempered with chaff and sand, decorated with a series of finger impressions at its end. Its diameter was about 30 cm. Since there are quite a few vessels whose rim diameter was roughly the same size, this artefact was perhaps the lid of one these pots. It is possible that it had originally been provided with a knob or a handle, although it must be borne in mind that handles of this type – often with a figural modelling – only became widespread in the Vinča period, spreading to the northeast and northwest from the Central Balkans. A number of figural lid knobs – and the associated lids – are known from the early Lengyel culture to the Copper Age from Transdanubia.[232] This find type is uncommon in the Körös– Starčevo and early Linear Pottery assemblages.

Vessel decoration

1. Special treatment and decoration of the vessel surface

The acidic, clayey soil in the Szentgyörgyvölgy area destroyed not only the bone and other organic finds, but also wore away the surface of the pottery, as a result of which little has survived of the one-time surface treatment and surface decoration of the pottery. From my examination of the pottery finds, I gained the impression that a fairly high proportion of the pottery had been polished and/or covered with a slip. This holds true not only for the fine wares, but also for the coarse household pottery, such as the thick-walled storage jars. Unfortunately, this decoration, so typical for Early Neolithic pottery, has only survived on a few sherds. The remains of the one-time slip and/or polishing could often only be observed over a minute area, suggesting that the number of vessels decorated in this manner was at least twice as high than what has survived. In many cases, the lustrous, dark red surface of the vessels was completely destroyed.

The situation is even worse in the case of black painted decoration. The use of black paint for ornamenting pottery is in itself an important chronological indicator and provides information on cultural impacts and cultural contacts. It is unnecessary to emphasize that black monochrome painting (sometimes combined with a white edging) was particular to the Starčevo culture since

[231] *Korkuti* (1996) Pls 60, 66 and 68.

[232] One of the most lovely types of figural lid knobs were animal shaped, usually depicting some imaginary creature. Cp. *Bánffy* (2002c).

Linear Pottery vessels were rarely adorned with painted patterns, except in the late Zselíz phase and other contemporary groups. The ceramic inventory from Pityerdomb, however, includes black painted pottery sherds. One indirect indication of pottery painting is the small vessel containing paint from Feature 11 (11/53, *Figs 43, 137d*) and one of the four vessel feet recovered from Feature 12 that was secondarily used as a pintadera, as shown by the remains of black paint on it. Even though it may be claimed that the presence of black paint does not necessarily imply that this paint was used for decorating pottery, since it may equally well have been used for body painting or for colouring textiles. It is quite possible that black paint was also used for these purposes. However, the finds from the bottom of the deeper features, such as Feature 19, included sherds whose black painted decoration survived as an imprint on the soil under the sherds. The photographs taken of these paint remains, although not of a good quality since they were made in the late afternoon at dusk, document this decoration, as did the paint remains on the still wet pottery fragments that – in spite of all our efforts – disappeared without a trace after the sherds had dried. Even so, the remains of black painting have survived on one pottery fragment.

The few pottery fragments fired in a pit with their rim set in ground, as a result of which a black band can be seen around the rim, are important chronological indicators. The acidic soil destroyed these black-topped vessels to a lesser extent, suggesting that their proportion in the ceramic assemblage reflects their actual frequency at Pityerdomb.

1.1. Dark red slip and polish

As has been mentioned above, many of the vessels were originally covered with a dark red slip and many pots had also been polished. It is noteworthy that coarse household pottery was decorated in this manner to the same extent as the fine wares. In many cases, the red slip was applied to both the exterior and the interior of the vessel and both sides of many vessels were polished. The reason for this may have been practical – vessels treated in this manner became more watertight – although aesthetic considerations no doubt also played a role.

A wide range of bowl types were covered with a slip and a lustrous polish: 2/3 *(Fig. 11)*, 3/1 *(Fig. 17)*, 4/3 *(Fig. 21)*, 9/2 *(Fig. 29)*, 11/31, 44 *(Fig. 41)*, 11/46 *(Fig. 42)*, 12/3–4 *(Fig. 49)*, 12/17–19 *(Fig. 52)*, 14/15 *(Fig. 58)*, 15/1 *(Fig. 60)*, 15/16 *(Fig. 62)*, 15/27 *(Fig. 63)*, 15/29 *(Fig. 64)*, 16/2–3 *(Fig. 67)*, 16/4 *(Fig. 68)*, 16/14 *(Fig. 71)*, 13/27 *(Fig. 79)*, 17/3 *(Fig. 82)*, 19/25 *(Fig. 94)*, 21/11 *(Fig. 105)*, 24/6 *(Fig. 111)*, 24/4 *(Fig. 110)*, 27/7, 9 *(Fig. 120)* and 29/12 *(Fig. 126)*. Pedestalled vessels were also often ornamented in this manner – 9/17 *(Fig. 30)*, 11/1 *(Fig. 34)*, 14/11 *(Fig. 57)*, 15/13–14 *(Fig. 61)*, 17/7 *(Fig. 83)*, 18/1 *(Fig. 87)*, 19/30 *(Fig. 94)* and 20/12 *(Fig. 100)* – as were cooking pots and storage jars –11/8–9 *(Fig. 35)*, 11/48 *(Fig. 42)*, 12/29 *(Fig. 53)*, 13/6 *(Fig. 76)*, 17/6 *(Fig. 82)*, 18/4 *(Fig. 87)*, 19/31 *(Fig. 95)*, 19/34 *(Fig. 96)* –, storage jars with handles – 11/15 *(Fig. 37)* – and large, storage bin-sized vessels: 17/14 *(Fig. 85)* and 27/6 *(Fig. 118)*. This decoration can also be observed on thin-walled cups: 11/32–34, 37, 39, 47, 49 *(Fig. 41)*, 14/9 *(Fig. 57)* 13/19, 21 *(Fig. 79)*, 17/2 *(Fig. 82)* and 29/4 *(Fig. 126)*. The vessel with the human hand shaped lug was similarly covered with a polished, dark red slip (11/54, *Figs 44, 145*), as was the small suspension vessel (11/55, *Fig. 44*).

The practice of polishing fine wares was fairly widespread in the Early Neolithic of the Balkans and in the early Linear Pottery culture. Vessels covered with a reddish or purplish-reddish slip are often mentioned, although most descriptions tend to remain general: "Fine pottery is made up of smaller vessels which typically have a carefully smoothed or polished surface. Occasionally we can observe the application of a thin, clay … slip."[233] Although N. Kalicz noted

[233] *Kalicz–M. Virág–T. Biró* (1998) 160.

that red slipped pottery fragments also occurred among the finds from Lánycsók, he emphasized that these came from vessels tempered with sand instead of the usual chaff.[234] He also noted that with the exception of a few sherds, all the fine wares in the Transdanubian Starčevo assemblages were red slipped and polished.[235] The suspension vessel from Gellénháza was covered with a brown slip on both sides.[236]

In general we may say that the proportion of red slipped and polished vessels in the ceramic inventory from Pityerdomb is much higher than in Starčevo and early Linear Pottery assemblages; moreover, a red slip was applied not only to the thin-walled fine wares, but also to both sides of coarse, thick-walled vessels. Although the remains of the slip and the polish could often only be observed on the interior side, these pottery fragments usually had an extremely worn exterior and it seems likely that their exterior too had been slipped and polished. When examining the finds from the sites in the Balaton region, I found that the presence of red slipped and polished sherds was one indication of Starčevo influences on local wares. One case in point is the assemblage from Révfülöp, containing a few such fragments.[237]

1.2. Black-topped technique

Five fragments from vessels made using this technique were found at Pityerdomb. In view of the published find assemblages from this region, the occurrence and the proportion of pottery decorated with this technique is rather significant. Each fragment comes from a fairly large and thick-walled vessel; one was a bomb shaped vessel, the others were storage jars with a hemispherical rim. As mentioned above, this was a relatively simple, but nonetheless very distinctive decorative technique: the vessel was placed into the firing pit with its mouth set into the soil. The vessel body attained a reddish or yellowish-red colour during the firing in an oxidizing atmosphere, while a few centimetres wide band around the rim became black or smoky grey. The most distinctive black-topped fragment is a rim sherd from a thick-walled storage jar: 13/1 *(Fig. 75)*. The other rim fragments in this category, 14/3 *(Fig. 57)*, 15/25 *(Fig. 63)*, 22/4 *(Fig. 108)* and 30/1 *(Fig. 129)*, also come from similar vessels.

According to E. Alram-Stern, the earliest occurrence of the black-topped technique is represented by a find from Hagios Petros in Thessaly. Quoting N. Efstratiou, she claimed that vessels decorated using this technique occur together with monochrome ware in the lowermost settlement level.[238] This claim is in essence repeated in a chronological chart of the Neolithic and Copper Age of central and southern Greece, in which black-topped wares are mentioned with monochrome and early polichrome (rainbow) ware in association with the Protoseskło period.[239]

Aside from this possible early occurrence, most prehistorians agree that the black-topped technique made its appearance at more or less the same time in the Balkans. Although the label attached to the period in question varies since it is correlated with a phase in each prehistorian's individual chronological-typological scheme – Vinča A1 in Lazarovici's, late Starčevo Spiraloid B in W. Schier and R. Gläser's, late Körös–Szatmár II in P. Raczky's and Protovinča in J. Makkay's[240] – there is a consensus that the period itself falls into the mid-6th Millennium, around 5500–5400 B.C. The main difference between the various views is that some scholars consider the black-

[234] *Kalicz* (1990) 49.
[235] *Kalicz* (1990) 53.
[236] *H. Simon* (1996) 67.
[237] Keszthely, Balaton Museum, inv. no. 65.301.1. I would here like to thank Róbert Müller, director, and Judit P. Barna for their kind permission to study the finds.
[238] *Alram-Stern* (1996) 121.
[239] *Alram-Stern* (2000) 250, Fig. 1.
[240] *Lazarovici* (1976) 203; *idem* (1977a); *idem* (1981) 173; *Schier* (1997); *Gläser* (1991); *idem* (1994); *Raczky* (1983); *Makkay* (1988).

topped technique a distinctive trait of the Vinča culture, while others regard it as a legacy of the Starčevo period, emphasizing the appearance of this technique in areas where cultural impacts from the Vinča culture can hardly be demonstrated. In some studies, the black-topped and the black burnished technique are mixed up and used as synonyms, even though black burnished decoration is reserved for a technique involving the polishing of the vessel surface to a shiny black, metallic lustre. True enough, this decorative technique also became widespread during the early Vinča period, but it has little in common with the much simpler black-topped technique. Gh. Lazarovici has discussed the distribution of black-topped ware in the Banat and in South-East Europe in a series of studies. He quoted black burnished pottery from the Gornea and Ostrovul Golu sites, where black-topped ware was extremely rare: the few pieces found at these sites were Vinča (A1–A3) imports.[241] The association of this technique with the Vinča culture is confirmed by the observation that in Bulgaria black-topped wares have only been found in areas where the cultural impact of the Vinča culture can be demonstrated through other finds as well. Black-topped vessels have been found at Sapareva Banja, but not to its south.[242] Similarly, black-topped ware has been recovered from the levels contemporary with Vinča A3 at Paradimi, Photolivos and Nea Nikomedeia, as well as at Dikili Tash and Sitagroi, usually with finds of the earliest, Tsangli phase of the Dimini culture.[243] The Paradimi settlement yielded a fine assemblage of black-topped vessels, published in a catalogue to an exhibition organized after the site report had been published. One interesting feature of the assemblage is that it also included a small, four-legged clay table so typical of the Middle Neolithic in South-East Europe that was also made using this technique: the table top and the upper part of the legs are black, the lower part is red.[244] Gh. Lazarovici mentions that Szatmár II imports were found at Gornea, providing additional proof for the chronological position and cultural contacts of this horizon.[245]

In Hungary, black-topped ware has been recovered from Pit 8 of the Kőtelek–Huszársarok site,[246] assigned to the Szatmár II period by P. Raczky.[247] J. Makkay considers black-topped pottery to be a distinctive feature of the Protovinča period; he quotes a vessel from the Endrőd 6 site.[248] Judging from the published photograph, this vessel may in fact be a black burnished specimen. As far as I know, Pityerdomb is the single site in Transdanubia where black-topped pottery has been found.

1.3. Black painting

In addition to a small vessel used for storing paint and the vessel foot reused as a pintadera mentioned in the above, the remains of black painting were preserved on one pottery fragment (15/31, *Figs 65, 142*). In a number of other cases, the black paint itself was not preserved on the vessel surface, but could be observed as an imprint on the soil under the sherds or it survived for some time on the vessel surface. An indistinct spiral pattern could be made out on one of the sherds from Feature 19; there was no apparent pattern on the other sherds decorated with black paint. The surviving traces indicated that the vessels had been painted before firing.

[241] *Lazarovici* (1976) 203; *idem* (1977b) 67–68.

[242] V. Nikolov's observation, mentioned during a discussion at the conference held in Zrenjanin (Nagybecskerek) in the autumn of 1996. Unfortunately, the papers read at this conference have not been published.

[243] *Hauptmann–Milojčić* (1969) 20–21; *Bakalakis–Sakellariou* (1981) 38; *Renfrew* (1969) 38–39.

[244] *Papathanassopoulos* (1996) 248–249, Cat. nos and Figs 81–83.

[245] *Lazarovici* (1977b) 80–81.

[246] *Raczky* (1983) 177.

[247] *Raczky* (1983) 166–168.

[248] *Makkay* (1990) 114, Fig. 1/1.

The paint samples sent to the Geological Institute of Hungary were submitted to thermo-analytical, chemical and X-ray diffraction and analyses.[249] The results indicated that the substance in question had a high carbon content (over 64 per cent) and that it also contained silicate and mineral oxides (CaO, MgO, K_2O, Fe_2O_3), perhaps originating from firing a tree species with a high resin content. I have not yet received the analytical results of the other sample, submitted to the Linz laboratory in 1997.

The use of black paint for decorating vessels at Pityerdomb is rather surprising if viewed from the perspective of the early Linear Pottery, but hardly unusual in knowledge of the distinctive traits of Starčevo pottery, even knowing that only a handful of black painted pottery fragments are known from the Spiraloid B period assemblages of Transdanubia. One of these comes from Harc–Nyanyapuszta, two others from Babarc, and a bowl fragment with a barely discernible black painted pattern applied before firing has been found at Vörs–Máriaasszonysziget.[250]

2. Applied ornaments

2.1. Knobs and lugs

2.1.1. Small, round, often pointed knob

Knobs of this type were often applied to smaller vessels and bowls: 7/1 *(Fig. 23)*, 8/6 *(Fig. 26)*, 11/45 *(Fig. 41)*, 12/27 *(Fig. 53)*, 15/28 *(Fig. 63)*, 13/18 *(Fig. 79)*, 18/5 *(Fig. 87)* and 30/16 *(Fig. 131)*, as well as to thin-walled, small cups: 14/9 *(Fig. 57)* and 25/2 *(Fig. 114)*. Pointed knobs were sometimes set on storage jars – 30/4 *(Fig. 129)* – and on the carination of biconical vessels: 9/5 *(Fig. 29)*, 12/20 *(Fig. 53)*, 27/5 *(Fig. 119)*, 30/17 *(Fig. 132)*. Similar pointed and also perforated knobs were applied to the carination of the suspension vessel: 11/55 *(Fig. 44)*.

Similar small, round and sometimes pointed knobs were widespread in the late Starčevo culture of Slavonia and the Srem.[251] The appearance of these knobs can hardly be regarded as a new decorative element since they reflect the earlier Starčevo tradition, as shown also by the finds from the Transdanubian sites assigned to the culture's classical phase. A small double knob ornaments the globular bowls from Bóly and Barcs,[252] and similar knob decorated vessels can also be quoted from Vörs–Máriaasszonysziget and Kaposvár–Deseda.[253] A bowl fragment with a small knob set on its side from Babarc indicates their survival into the late Starčevo phase.[254] Knobs were popular in the early Linear Pottery of Transdanubia, as shown by the finds from Medina, Zalavár–Keleti-tanya and Budapest–Aranyhegyi Road–Mocsáros.[255]

2.1.2. Finger impressed knob

This knob variant, typical for the Early Neolithic and the Körös–Starčevo culture, survived until the early Linear Pottery, disappearing gradually in the later phases of the culture. This knob with a finger impressed centre was very popular at Pityerdomb. It can be found on bowls and cups: 8/2 *(Fig. 25)*, 8/4 *(Fig. 26)*, 12/5 *(Fig. 49)*, 12/28–29 *(Fig. 53)*, 14/7 *(Fig. 57)*, 13/8 *(Fig. 76)*, 13/15

[249] I would here like to thank Károly Brezsnyánszky and Tibor Csemy for their kind help in analyzing the samples.

[250] *Kalicz* (1990) Fig. 43/4; *Bánffy* (2001) Fig. 3/5, 8; *Kalicz–M. Virág–T. Biró* (1998) 162.

[251] Vinkovci–Marketplace: *Dimitrijević* (1969a) Fig. 6/8; Golokut–Vizić: *Petrović* (1986–87) Fig. 3/1, 3, 18–19.

[252] *Kalicz* (1990) Fig. 38/5, Fig. 28/12.

[253] *Kalicz–M. Virág–T. Biró* (1998) Fig. 5a/1, 5–6, 5b/10; cp. also its double knob variant: Fig. 7/4; *Kalicz* (1990) Fig. 34/6.

[254] *Bánffy* (2001) Fig. 1/8.

[255] *Gläser* (1994) Fig. 166/15, Fig. 254/5; *Kalicz-Schreiber–Kalicz* (1992) Fig. 5/14.

(Fig. 79), 19/16 *(Fig. 91)*, 22/2 *(Fig. 108)*, 27/33 *(Fig. 121)*, as well as on storage jars: 9/10 *(Fig. 28)*, 11/25 *(Fig. 40)*, 15/32 *(Fig. 61)*, 20/1 *(Fig. 98)*, 21/2 *(Fig. 103)*, 27/13–14 *(Fig. 120)*, 27/26, 40 *(Fig. 121)*, 30/11, 16 *(Fig. 131)*.

Finger impressed knobs were frequently used to decorate Starčevo vessels. The larger ones may have had some practical function, for they prevented the vessel from slipping from the hands. St. Dimitrijević published a vessel with such knobs from the Vinkovci–Sandpit site,[256] and vessels with knobs of this type have also been found at the classical Starčevo sites of Barcs and Szentlászló–Almáspatak,[257] as well as at Kaposvár–Deseda and Gellénháza–Városrét, dating to the late, Spiraloid B phase of the culture.[258]

The finds from Becsehely II, Sé, Zalavár–Keleti-tanya and Vonyarcvashegy in southwestern Transdanubia too include finger impressed knobs.[259] Similar knobs have also been found farther to the north, at Bicske–Galagonyás, Budapest–Aranyhegyi Road–Mocsáros and Pit 1 of the Kúp–Egyes site, as well as at Sárkeresztes–Pékmalomdomb, although the finds from the latter site are later than the early Linear Pottery phase.[260] This knob was quite popular at Bíňa[261] (Bény) and a lug handle of this type has also been reported from Prellenkirchen near Bruck/Leitha.[262]

2.1.3. Notched, bipartite knob

This is the other knob type typical of Early Neolithic assemblages – and only of these. The notch, usually in the centre of the knob, was done with some tool, but in many cases the knob was divided into several parts, especially if it was set on a larger vessel. This notching could hardly have served some practical function since it did not alter the size of the knob. Knobs of this type occur on smaller cups and larger bowls: 8/5 *(Fig. 26)*, 11/1, 10 *(Fig. 34)*, 15/18 *(Fig. 62)*, 22/6 *(Fig. 108)*, 27/17 *(Fig. 120)*, 30/7 *(Fig. 129)*, as well as on large, thick-walled storage jars and cooking pots: 2/21 *(Fig. 15)*, 9/16 *(Fig. 30)*, 11/12 *(Fig. 36)*, 11/23 *(Fig. 39)*, 14/14 *(Fig. 58)*, 15/5–7 *(Fig. 60)*, 15/19 *(Fig. 62)*, 16/9–10 *(Fig. 69)*, 17/10 *(Fig. 83)*, 24/12 *(Fig. 111)*, 25/3 *(Fig. 114)*, 27/30–31 *(Fig. 121)*, 29/8–9, 11 *(Fig. 127)*.

Knobs divided by notching are known from several Transdanubian assemblages of the classical (Linear B) and late (Spiraloid B) phase of the Starčevo culture, such as the ones from Barcs and Becsehely,[263] and they can also be quoted from the late Starčevo ceramic inventory recovered from Vörs and Gellénháza,[264] the two sites lying close to Pityerdomb. Other comparable finds from this region include the ones from Andráshida–Gébárti-tó, Zalavár–Keleti-tanya and Vonyarcvashegy.[265] Other early Linear Pottery sites in Transdanubia where knobs of this type have been found are Szentlőrinc, Bicske–Galagonyás and Budapest–Aranyhegyi Road-Mocsáros.[266] E. Ruttkay has published two fragments from Prellenkirchen in Austria.[267]

[256] *Dimitrijević* (1969a) Fig. 3/7.
[257] *Kalicz* (1990) Fig. 28/12, Fig. 30/3; Fig. 39/6.
[258] *Kalicz* (1990) Fig. 36/3, Fig. 38/2; *H. Simon* (1996) Fig. 3/3, 7.
[259] *Kalicz* (1980) Fig. 4/4; *Gläser* (1994) Fig. 211/9, Fig. 254/4, Fig. 243/2, 9, 12.
[260] *Makkay* (1978) Fig. 5/2–3, 21–22; *Kalicz-Schreiber–Kalicz* (1992) Figs 9–12; *Gläser* (1994) Fig. 145/6–8, Fig. 209/1, 3.
[261] *Pavúk* (1980) Fig. 30/5, 9, 11, Fig. 31/3.
[262] *Ruttkay–Wessely–Wolff* (1976) Fig. 1/2.
[263] *Kalicz* (1990) Fig. 29/3, 5, Fig. 28/10, Fig. 45/9–12.
[264] *Kalicz–M. Virág–T. Biró* (1998) Fig. 9a/6–8; *H. Simon* (1996) Fig. 10/9.
[265] *Horváth–H. Simon* (1997) Fig. 1/11, Fig. 2/5; *Gläser* (1994) Fig. 249/2, 4, Fig. 250/14, Fig. 254/3; *Kalicz* (1988) Fig. 30/3, 10.
[266] *Gläser* (1994) Fig. 235/12; *Makkay* (1978) Fig. 16/3, Fig. 24/18; *Kalicz-Schreiber–Kalicz* (1992) Fig. 7/6, 9, Fig. 11/3, 7, Fig. 12/1, 4–5, 10.
[267] *Ruttkay–Wessely–Wolff* (1976) Fig. 1/3–4.

2.1.4. Protruding, rectangular knob

Large, rectangular, protruding knobs are relatively rare; most came from large, thick-walled vessels and their function was more practical, than aesthetic – they probably functioned as handles. The knobs in this category are the following: 9/15 *(Fig. 28)*, 11/6 *(Fig. 34)*, 11/31 *(Fig. 41)*, 12/24 *(Fig. 53)*, 13/16, 29 *(Fig. 80)*, 21/3 *(Fig. 103)*, 27/25, 28 *(Fig. 121)*, 31/9 *(Fig. 135)*.

Similar knobs, or rather lug handles, can be quoted from the late Starčevo assemblage of Gellénháza and the early Linear Pottery assemblage of Becsehely II.[268]

2.1.5. Upward curving lug handle

This variant is even less frequent than the previous knob type, represented by a few finds only at Pityerdomb. Similarly to the vessel handles, the base of the lug handle was decorated with a row of finger impressions (19/6, *Fig. 89*) or the lug itself was ornamented with finger impressions (11/43, *Fig. 42*). The other lug handles are the following: 19/5 *(Fig. 89)*, 24/10 *(Fig. 111)* and 27/29 *(Fig. 122)*.

This lug handle was infrequent not only at Pityerdomb, but also on other contemporary sites (although it is also possible that they were not mentioned in the publications). The single analogous find comes from Vörs–Máriaasszonysziget;[269] if this is indeed the case, we may assume that these lug handles perhaps represent one of the distinctive features of the late Starčevo development in western Transdanubia.

2.1.6. Large, flat knob

This knob type was only set on a few storage jars: 19/21 *(Fig. 93)* and 20/3 *(Fig. 98)*. The knobs were set on the most protuberant section of the globular belly.

A similar knob can be seen on a flask shaped vessels from Lánycsók that was assembled from its fragments,[270] while the late Starčevo pottery finds from Babarc included a storage jar ornamented with a knob of this type and a lightly incised linear pattern.[271]

2.2. Barbotine

2.2.1. Applied barbotine

Of the different types of barbotine decoration – or surface treatment – characterizing the Körös–Starčevo culture and the early Linear Pottery phase, ornamentation with applied barbotine is quite rare at Pityerdomb. This is one of the characteristic traits that reflect the close ties with the Starčevo culture since applied barbotine was much more popular in the late Körös phase of the Tisza region.[272] Applied barbotine decoration was found on two fragments: 30/13, 15 *(Fig. 131)*.

Beside the pottery from Golokut in the Srem, vessel fragments with applied barbotine decoration can be quoted from Kaposvár–Deseda, Becsehely, Babarc, Vörs and Gellénháza.[273] This archaic decorative technique survived into the early Linear Pottery, as shown by the pottery finds from Budapest–Aranyhegyi Road–Mocsáros and Holohlavy, one of the earliest Neolithic sites in eastern Bohemia.[274]

[268] *H. Simon* (1996) Fig. 3/1, 5; *Gläser* (1994) Fig. 36/5.
[269] *Kalicz–M. Virág–T. Biró* (1998) Fig. 6a/1.
[270] *Kalicz* (1990) Fig. 16/5.
[271] *Bánffy* (2001) Fig. 3/10.
[272] *Trogmayer* (1966–67) *idem* (1968).
[273] *Petrović* (1986–87) Fig. 2/6; *Kalicz* (1990) Fig. 36/5, 45–46; *Bánffy* (2001) Fig. 6/3; *Kalicz–M. Virág–T. Biró* (1998) Fig. 6a/1, 9b/11, 14; *H. Simon* (1996) Fig. 6/7, Fig. 9/1, Fig. 11/1–2, 5, Fig. 12/1.
[274] *Kalicz* (1988) *Fig. 47/1; Pavlů–Vokolek* (1992) Fig. 10/7–8.

2.2.2. Channelled barbotine

The decoration of vessels by splashing them with semiliquid clay paste, the so-called *Schlickwurf* technique, was at Pityerdomb replaced by a variant of this ornamentation that was typical for the late Starčevo period: the fingers were run over the semiliquid clay, the result being a decoration similar to channelling. Very often a genuine pattern of circles or spirals was created by innovative potters; one of the vessels from Babarc is decorated with an intricate pattern of triangles.[275] None of the barbotine decorated pottery fragments from the Pityerdomb site can be regarded as irregular, genuine *Schlickwurf*, while a finger drawn barbotine decoration can be seen on several fragments. On some storage jars, this barbotine decoration was oblique: 17/12 *(Fig. 84)*, 24/13 *(Fig. 111)*, vertical: 19/23–24 *(Fig. 93)*, 21/6 *(Fig. 105)*, or curved: 20/1, 3 *(Fig. 98)*.

This type of barbotine decoration was popular both in the late Starčevo and in the early Linear Pottery culture. Vessels decorated with this technique have been found at Golokut–Vizić, Vinkovci–Marketplace and Vinkovci–May 1 Road;[276] in Transdanubia, this decoration is known from Kaposvár–Deseda, Dombovár–Kapospart, Bóly and Becsehely,[277] and it also occurs on the finds from Bóly and Becsehely,[278] as well as on vessel fragments from Gellénháza and Vörs–Máriaasszonysziget.[279] It was similarly widespread in the early Linear Pottery, as shown by the finds from Révfülöp, Vonyarcvashegy, Zalavár–Keleti-tanya and Zalavár–Belterület,[280] from Medina, Bicske–Galagonyás and Budapest–Aranyhegyi Road–Mocsáros,[281] as well as the pottery from sites north of the Danube, such as Milanovce (Nyitranagykér) and Branč (Berencs) in the Nyitra Basin.[282]

2.3. Finger impressed ribs

Last to be described among the applied ornaments on the Pityerdomb pottery are the finger impressed ribs since these represent a combination of applied and impressed decoration. Ribs were fairly common both in the South-East European and the Transdanubian distribution of the Starčevo culture, as well as in the early Linear Pottery culture. Several varieties can be distinguished at Pityerdomb: some barely rise above the vessel surface on bowls: 11/39 *(Fig. 41)*, 11/44 *(Fig. 41)*, 31/8 *(Fig. 134)* and on the carination of the vessel with human hands: 11/54 *(Figs 44, 145)*, and a similarly fine, less protruding variant was sometimes set on storage jars: 12/21 *(Fig. 53)*, 15/3 *(Fig. 60)*, 20/9 *(Fig. 99)*, 30/3 *(Fig. 129)*, 31/7 *(Fig. 133)*. More pronounced ribs with nail or finger impressions were sometimes used to decorate the shoulders of storage jars: 12/30 *(Fig. 53)*, 15/4 *(Fig. 60)*, 19/17 *(Fig. 91)*, 27/14–15 *(Fig. 120)*. Pottery fragment 17/6 *(Fig. 82)* is a fine example of a vessel ornamented with a combination of different decorative elements: in addition to the polished dark red slip, the relatively thick-walled vessel, perhaps a larger cooking pot or storage jar, was ornamented with a spiral meander pattern and a finger impressed rib on the shoulder. The finds also included a shorter, horizontally set rib, perhaps functioning also as a handle: 30/5 *(Fig. 129)*.

[275] *Bánffy* (2001) Fig. 4/13. Similar finger drawn barbotine, arranged into a pattern, has been reported from Pepelane–Lug in Croatia. *Minichreiter* (1992a) Fig. 2/8.

[276] *Petrović* (1986–87) Fig. 2/1–5, 7–11; *Dimitrijević* (1969a) Fig. 3/1–3, Fig. 4/3.

[277] *Kalicz* (1990) Figs 35–38, 41–42, 44.

[278] *Bánffy* (2001) Fig. 2/1–4, 8–9, 12–13, Fig. 3/1, 3, 6, Fig. 4/5–13, 15–16, Fig. 6/1–11.

[279] *Kalicz–M. Virág–T. Biró* (1998) Fig. 6b/4, Fig. 8b/14, Fig. 9b/10, 15; *H. Simon* (1996) Fig. 7/2–3.

[280] *Kalicz* (1978–79) Fig. 8/4, 11–12; *Kalicz* (1988) Fig. 30/6; *Kalicz* (1978–79) Fig. 10/11; *Gläser* (1994) Fig. 245/9, Fig. 246/5–6, Fig. 254/1–5.

[281] *Kalicz–Makkay* (1972a) Fig. 2/4–6, Fig. 23/2; *Makkay* (1978) Fig. 5/3, Fig. 22/1, 10, 21; *Kalicz-Schreiber–Kalicz* (1992) Figs 7–8.

[282] *Pavúk* (1980) Fig. 19/9, 16, 18, Fig. 20/4.

Judging from a pottery sherd published from Barcs,[283] ribs appeared in the classical Starčevo phase in Transdanubia, becoming more common during the later period of the culture, as shown by the finds from Kaposvár–Deseda and Gellénháza–Városrét.[284] Ribs decorated with finger impressions and/or pinched decoration appear among the finds of the early Linear Pottery at Szentlőrinc, Sármellék and Zalavár–Keleti-tanya,[285] surviving well into developed Transdanubian Linear Pottery.[286] Rib ornamented pottery has also been reported from the earliest Linear Pottery sites north of the Danube, for example from Branč[287] and Mihalovce–Hrádok.[288]

3. Impressed and incised decoration

3.1. Finger impression, pinched decoration

3.1.1. Finger impression, pinched decoration on the rim

The decoration of the upper part of the rim with a row of finger impressions or pinched decoration or both was quite frequent at Pityerdomb. Obviously, vessels with a thick rim were most often decorated in this manner. Vessel types range from storage jars to cups, the only exception being the polished biconical bowls with thin rim. One large storage jar with indrawn rim and two others with outturned rim were ornamented with pinched decoration only: 4/1 *(Fig. 20),* 30/11 *(Fig. 131),* 31/2 *(Fig. 134).* Rows of finger impressions sometime occur by themselves, and very often the impression of the nail was also preserved in the soft clay. In this sense, we may speak of finger and nail impressions on fragments 2/1, 4 *(Fig. 11),* 8/4, 6 *(Fig. 26)* and 15/28 *(Fig. 63),* on a large, black-topped storage bin: 13/1 *(Fig. 75),* and on fragments 19/16 *(Fig. 92),* 19/19 *(Fig. 86)* and 19/40 *(Fig. 96).*

This decorative technique was practically unknown in the Körös culture and was also rare in the early Starčevo period: only a few occurrences can be quoted from Vukovar–Gymnasium and Barcs.[289] Vessel rims with finger impressed or pinched decoration became more widespread in the late period, as shown by vessel fragments from Kaposvár–Deseda, Babarc, Vörs and Gellénháza,[290] becoming truly popular at the close of the Early Neolithic and the beginning of the Middle Neolithic: Vinča A in the south, the early Dudești assemblages in the southeast, as well as in the early Linear Pottery.[291] Sites yielding pottery with this decoration include Becsehely II, Révfülöp, Zalavár–Keleti-tanya, Sármellék and Sé;[292] in other words, the ornamentation of vessel rims with finger impressions and pinched decoration was popular among the early Linear Pottery communities living west of Lake Balaton (Gellénháza and Vörs also lie in this area). This decoration can also be found at Rosenburg, dating from a slightly later period.[293]

[283] *Kalicz* (1990) Fig. 30/5.

[284] *Kalicz* (1990) Fig. 36/1, Fig. 37/5; *H. Simon* (1996) Fig. 6/1, Fig. 7/4, 6–7.

[285] *Gläser* (1994) Fig. 236/11, Fig. 237/4, 7; *Kalicz* (1978–79) Fig. 10/4; *Gläser* (1994) Fig. 245/6, Fig. 248/1, 4–5, Fig. 249/2.

[286] Bicske–Galagonyás: *Gläser* (1994) Fig. 37/7–8; Medina–Margitsziget: *Kalicz* (1988) Fig. 27/3, 24; Becsehely II: *Gläser* (1994) Fig. 35/9; Budapest–Aranyhegyi út-Mocsáros: *Kalicz-Schreiber–Kalicz* (1992) Fig. 10/13–14, Fig. 11/10, 13, Fig. 12/9, the latter combined with pinched decoration.

[287] *Pavúk* (1980) Fig. 20/6, Fig. 31/1–8, Fig. 32/5.

[288] *Lichardus* (1972) Pl. 2.

[289] *Dimitrijević* (1969a) Fig. 2/1, 4–5; *Kalicz* (1990) Fig. 30/4, 7.

[290] *Kalicz* (1990) Fig. 38/3–4, 6; *Bánffy* (2001) Fig. 4/1, 4; *Kalicz–M. Virág–T. Biró* (1998) Fig. 6a/3, Fig. 6b/4, Fig. 7/1, 4; *H. Simon* (1996) Fig. 6/1, 4, Fig. 11/1–5.

[291] *Kalicz-Schreiber–Kalicz* (1992) 57.

[292] *Gläser* (1994) Fig. 34/2–6, Fig. 208/14; *Kalicz* (1978–79) Fig. 10/4; *Gläser* (1994) Fig. 212/2, Fig. 245/5, 7, Fig. 251/ 5, 8–9.

[293] *Lenneis* (1989) Fig. 6/1.

3.1.2. Finger impression and pinched decoration on the vessel body

Finger impressions and pinched decoration was sometimes arranged into a loose row, mostly under bowl rims (14/2, *Fig. 56*) or in a slightly denser row on the vessel body: 15/17 *(Fig. 62),* 20/10–11 *(Fig. 100).* A row of finger impressions decorated the shoulder of a large storage jar with outturned rim: 19/22 *(Fig. 93).* The two were sometimes combined, with the finger impressions on the upper part, the pinched decoration on the lower part of the vessel (14/1, *Fig. 56*), the latter recalling the 'rain pattern' of the early Linear Pottery, with the pattern made up of pinched decoration instead of short stabs. Pinched decoration sometimes appears on the carination: 3/2 *(Fig. 18).* The finger impressions or pinched decoration was arranged into a V pattern on some vessels: 22/2 *(Fig. 108),* or into oblique rows, as on a knob decorated storage jar (29/8, *Fig. 127*) and a biconical vessel with a pattern of parallelly incised lines (11/5, *Fig. 34*).

Vessel handles and the vessel body under the handle were sometimes also ornamented with finger impressions. Rows of finger impressions were used to decorate both vertically (11/43, *Fig. 42*) and horizontally (20/6, *Fig. 99*) set handles. The lower part of a horizontally set handle (19/6, *Fig. 89*) and the upper part of a vertically set one (27/35, *Fig. 122*) both bore finger impressions, while two other handles were decorated with three finger impressions both on their upper and lower part: 21/1 *(Fig. 103)* and 30/6 *(Fig. 129).*

Patterns of finger impressions and pinched decoration were popular in the late Starčevo and the early Linear Pottery culture, and a slight shift can also be noted in their proportion: finger impressed decoration became more dominant in the later phase. The genuine 'homeland' of pinched decoration was the Körös culture, although it was also quite popular in the late Starčevo culture of Slavonia (Vinkovci–Sandpit), as well as in the Balaton region (Vörs–Máriaasszonysziget and Gellénháza).[294] The finds from the latter two sites include a pottery fragment ornamented with a 'rain pattern' of pinched decoration, resembling the one from Pityerdomb. This decorative technique survived into the early and, also, into the classical, Keszthely phase of the Linear Pottery in Transdanubia, as shown by the finds from Becsehely, from pit 1 of the Lovasberény–Gubadomb site and from Sárkeresztes–Pékmalomdomb.[295] In the Budapest area, pottery sherds ornamented in this manner are known from Budapest–Aranyhegyi Road–Mocsáros and from a few features dating to the early Linear Pottery period of the Szigetszentmiklós site.[296] A few vessel fragments bearing this decoration have also been reported from Mihalovce–Hrádok.[297]

The single Starčevo site in Transdanubia where pottery decorated with rows of finger impressions was found is Vörs.[298] This decoration was more widespread in the early Linear Pottery, reflected in the finds from Becsehely II, Bicske–Galagonyás, Budapest–Aranyhegyi Road–Mocsáros, Révfülöp, Medina, Keszthely–Dobogó and Sárkeresztes–Pékmalomdomb.[299] A few early Linear Pottery vessel fragments from Prellenkirchen were also ornamented with finger impressions.[300]

3.2. Incised linear pattern

This is one of the cardinal points of the Pityerdomb pottery. The blend of late Starčevo and early Linear Pottery traits has been repeatedly mentioned in the discussion of the distinctive traits of

[294] *Dimitrijević* (1969a) Fig. 3/2; *Kalicz–M. Virág–T. Biró* (1998) Fig. 6a/3; *H. Simon* (1996) Fig. 3/8, Fig. 6/8.

[295] *Gläser* (1994) Fig. 36/8, Fig. 162/8 (with pinched decoration arranged into rows forming a rain pattern), Fig. 209/2–3.

[296] *Kalicz-Schreiber–Kalicz* (1992) Fig. 9; *M. Virág* (1992) Fig. 6.

[297] *Lichardus* (1972) Pl. 1.

[298] *Kalicz–M. Virág–T. Biró* (1998) Fig. 8a/9.

[299] *Kalicz* (1980) Fig. 5/12; *Makkay* (1978) Fig. 24/14; *Kalicz-Schreiber–Kalicz* (1992) Figs 9–11; *Kalicz* (1978–79) Fig. 8/4, 10; *Kalicz* (1988) Fig. 27/14; *Gläser* (1994) Fig. 135/1, 4, Fig. 136/6, Fig. 209/1, 6.

[300] *Ruttkay–Wessely–Wolff* (1976) Fig. 3/1–3.

the settlement. In fact, the overall nature of the ceramic inventory tends to tip the scales in favour of the Starčevo culture. However, the presence of incised linear patterns is indisputably a Linear Pottery trait – as shown also by its name – even if certain antecedents can be demonstrated in the western Starčevo province.

The diversity of the linear patterns on the pottery from Pityerdomb is somewhat misleading for it suggests that many vessels were ornamented in this manner. This is not the case. Naturally, every single sherd ornamented with a linear pattern of some type is described in the section on the finds; however, the number of pottery fragments ornamented in this manner – including the smoothed-in variety – does not exceed eighty pieces, accounting for no more than 0.5 percent of the entire ceramic inventory. In view of the fact that the linear decoration was made up of deeply incised lines, the scarcity of this decoration in the Pityerdomb assemblage can hardly be attributed to the worn surface of the pottery finds. In many cases, it is quite obvious that the lines were incised rather haphazardly and crudely – one has the impression that most were drawn by an 'untrained' hand not only on the coarse, household pottery, but also on the more carefully made bowls. What is nonetheless remarkable is that the potters of the Pityerdomb settlement experimented with a wide range of linear motifs and patterns in the initial, so to say experimental phase of linear decoration.

3.2.1. Single lines

The single lines on smaller fragments may in some cases have been part of a larger pattern: 19/7, 10 *(Fig. 90)*. However, the single lines on larger fragments, appearing almost unexpectedly on the vessel body and rarely placed in a pronounced area, indicate that these were not part of a larger pattern, as for example, on the rim and body fragment bearing an oblique line (2/10, *Fig. 13*). The shoulder fragment of a red slipped polished vessel is decorated with a vertically incised line: 12/5 *(Fig. 49)*, while a base fragment is similarly ornamented with a single oblique line: 27/16 *(Fig. 123)*.

3.2.2. Multiple lines

Two, three or more lines were usually arranged into bundles. Three parallelly incised lines are quite frequent, running either horizontally: 11/41 *(Fig. 41)*, 31/4, 6 *(Fig. 135)*, or vertically: 20/2 *(Fig. 98)*, 27/19 *(Fig. 123)*. One base fragment has three short, obliquely incised lines: 19/29 *(Fig. 94)*. The fragment of a biconical bowl decorated with pinched decoration arranged into an oblique row also bears two closely spaced horizontal incised lines, although the original pattern may have been made up of three lines: 11/5 *(Fig. 34)*. On some fragments the lines are set at an angle, perhaps part of a larger pattern: 9/8 *(Fig. 28)*, 19/8 *(Fig. 90)*. On one bowl fragment two delicate lines run under the rim inside the vessel, a rather unique decoration: 16/1 *(Fig. 67)*. Another fragment has three, lightly incised, haphazard lines: 31/5 *(Fig. 135)*. A shoulder fragment from a storage jar has a series of deeply incised, irregularly spaced lines: 3/3 *(Fig. 18)*.

Parallelly incised lines first appeared well before the Linear Pottery culture. Quite a few Körös and Starčevo sherds were decorated with incised lines that sometimes formed a lattice pattern.[301] In Transdanubia, patterns of smoothed-in or deeply incised parallel lines are known from the Linear B phase, as shown by the finds from Lánycsók that also included a fragment with a pattern of incised lines.[302]

[301] For a good overview of this pattern, cp. *Makkay* (2000); it also occurs among the finds from Lánycsók: *Kalicz* (1990) 70, and Fig. 19/3, Fig. 22/9–10, 12, 20, Fig. 25/11.

[302] *Kalicz* (1990) Fig. 22/12–14, 16, Fig. 24/5.

A decoration of incised lines can also be quoted from late Starčevo assemblages. St. Dimitrijević published pottery sherds decorated in this manner from Vinkovci–Marketplace and Krstičeva Humka;[303] moving north, the finds from Babarc and Kaposvár–Deseda included knobbed sherds with two incised lines,[304] and similar finds can also be quoted from Vörs–Máriaasszonysziget and Gellénháza near the western shores of Lake Balaton.[305]

Bundles of incised lines became more frequent in the pottery assemblages from the Transdanubian sites of the early Linear Pottery; as a matter of fact, this type of linear pattern is typical for the early Linear Pottery phase. The most common varieties of the triple linear pattern – three vertical lines alternating with small, pointed knobs on the carination of biconical vessels and meander patterns of three parallel lines – do not occur in the pottery from Pityerdomb. Patterns made up of bundles of three lines can be quoted from Sé, Szentlőrinc and Zalavár, as well as from Bicske–Galagonyás, Medina–Margitsziget and Budapest–Aranyhegyi Road–Mocsáros.[306] Similar incised patterns are also known from Donnerskirchen and Wullendorf in Lower Austria.[307]

3.2.3. Spiral meanders

Circular or oval spiral meander patterns have since the early 1960s been regarded as a distinctive trait of the early Linear Pottery culture (sometimes also reflected in the name given to the Linear Pottery).[308] This pattern appears on five vessels, each of them special in some way. The globular vessel used for storing paint was decorated with a spiral meander (11/53, *Fig. 43*), as was the upper part of a biconical bowl whose carination was ornamented with a finger impressed rib and two upheld human hands (11/54, *Figs 44, 145*). Another fragment, coming from a storage jar, bore a spiral meander combined with a rib set on the shoulder (17/6, *Fig. 82*). Unfortunately, only the upper part has been preserved. Yet another fragment from a large storage jar bore two spiral meanders set opposite each other (22/1, *Fig. 107*). The fifth fragment, part of a large storage jar with outturned rim, had curved lines under the rim, probably part of a spiral meander pattern (31/1, *Fig. 133*).

Although spiral meander patterns were considerably more popular in the early Linear Pottery, it is nonetheless conspicuous that rectangular meanders were not used to decorate the pottery at Pityerdomb. The single artefact decorated with a rectangular meander is the animal figurine from Feature 11: 11/56 *(Figs 45, 146)*. It must also be borne in mind that applied spiral decoration, popular in the late Körös and Starčevo culture, does not appear on the Pityerdomb pottery. This is all the more noteworthy since a similar tendency can also be noted in the other early Linear Pottery assemblages from Transdanubia and, at the same time, we know that ornamentation of this type has been documented at Vörs and Gellénháza, the two sites lying close to Pityerdomb both spatially and chronologically. It would appear that spiral patterns, popular both in their painted and appliqué variety in the late Starčevo culture, survived as an incised decoration in the period when linear patterns became dominant.

The earliest vessel decorated with a spiral meander pattern comes from the late Starčevo site of Vörs–Máriaasszonysziget.[309] It is therefore possible that incised spiral meanders were inspired by the distinctive black painted patterns of the late Starčevo culture, after which the latest phase

[303] *Dimitrijević* (1969a) Fig. 6/7; *idem* (1974) Fig. 19/11–16.

[304] *Bánffy* (2001) Fig. 3/10; *Kalicz* (1990) Fig. 34/8.

[305] *Kalicz–M. Virág–T. Biró* (1998) Fig. 8a/6, Fig. 21; *H. Simon* (1996) Fig. 3/4.

[306] *Kalicz* (1978–79) Fig. 12/5, 9, Fig. 11/6, 10, Fig. 10/12; *Gläser* (1994) Fig. 246/1, 4, Fig 285/8, 10–11; *Makkay* (1975a) Fig. 14; *idem* (1978) Fig. 17; *Kalicz–Makkay* (1972a) Fig. 3/9; *Kalicz-Schreiber–Kalicz* (1992) Figs 3–4.

[307] *Lenneis* (1989) Fig. 7/1–2.

[308] *Tichý* (1958a); *Tichý* (1960); *Tichý* (1962) 301.

[309] *Kalicz–M. Virág–T. Biró* (1998) Fig. 8a/1, 7.

(Spiraloid B) was named. The fact that black painting was used for vessel ornamentation at Pityerdomb and that a spiral pattern could be made out on one of the vessel fragments from Feature 19 while it was still wet seems to confirm this possibility.

Spiral patterns were used to decorate vessels from Becsehely II, Mernye and Budapest–Aranyhegyi Road–Mocsáros,[310] although these were not made up of two or three incised lines, but of concentric spiral lines. Similar patterns adorned the early Linear Pottery vessels from Moravia, Mohelnice and the sites in the Brno area, as well as a number of pots from Lower Austrian sites, such as Oberravelsbach, Sommerein, Rosenburg, Winden/See and Frauenhofen, and early Linear Pottery vessels from eastern Bohemia.[311]

3.2.4. Zig-zag lines and 'rain pattern'

Patterns of parallel lines set at an angle were rather rare at Pityerdomb; only three fragments were decorated in this manner: 19/11 *(Fig. 90)* and 30/21, 23 *(Fig. 132)*. Interestingly enough, the late Starčevo assemblage from Vörs–Máriaasszonysziget included several vessel fragments decorated with this pattern,[312] while this ornamental motif is entirely missing from the early Linear Pottery of Transdanubia. If the 'rain patterns' of interrupted zig-zag lines or parallel short lines, usually covering the entire vessel surface, are also included in this category, the frequency of this ornamental motif increases. One of the vessels assembled and reconstructed from its fragments (8/4, *Fig. 26*) is decorated with a 'rain pattern' of parallel, vertical lines, similar to the body fragment from another vessel (2/17, *Fig. 14*). A base fragment (19/18, *Fig. 91*) is covered with irregularly spaced short lines set at an angle, resembling a zig-zag pattern. The 'rain patterns' of pinched decoration resemble the incised ones of short lines (cp. section 3.1.2).

Vessels decorated with zig-zag lines, a rain pattern and their variants were quite popular in the Karanovo II and the contemporary Criş culture,[313] and they were also common in the late Körös period. The recently published finds from Dévaványa–Barcé-halom include a number of pottery fragments decorated with a rain pattern.[314] This motif survived into the early Alföld Linear Pottery, reflected by the finds from Tiszacsege–Homokgödör and Rétközberencs–Paromdomb,[315] both dating to the Szatmár II period.

This pattern also occurs on pottery finds from the central and western Starčevo distribution: the sites of the Spiraloid A phase include Tečić in the Morava Valley, while Vinkovci–Marketplace can be quoted from the late phase; in Transdanubia some of the finds of the Linear B phase from Lánycsók were decorated with this motif.[316] It apparently survived into the late Starčevo phase since it has also been reported from other early Linear Pottery sites in Transdanubia, such as Medina, Zalavár–Keleti-tanya, Bicske–Galagonyás, Budapest–Aranyhegyi Road–Mocsáros and the early finds from Szigetszentmiklós.[317] The ceramic inventory from Strögen also included vessel fragments bearing a rain pattern.[318] Finally, the finds from Bad Nauheim–Nieder-Mörlen near Frankfurt in Bavaria must also be mentioned since the finds from this settlement, including sherds decorated with zig-zag lines and rain patterns,[319] differ from the pottery in the Wetterau

[310] *Kalicz* (1988) Fig. 33/1, Fig. 28/3; *Kalicz-Schreiber–Kalicz* (1992) Fig. 3/3–5.

[311] *Tichý* (1962) Fig. 4/4–5, Fig. 13/2, 6–8, Fig. 17/2; *Lenneis* (1989) Fig. 3/1, Fig. 4/3–4, Fig. 6/4; *idem* (1995) Figs 3–4; *Pavlů–Vokolek* (1992) Fig. 10/52.

[312] *Kalicz–M. Virág–T. Biró* (1998) Fig. 5b/8, Fig. 8a/3–5.

[313] *Todorova* (1989) 12, and Fig. 4.

[314] *Oravecz* (1997) Fig. 4/6, Fig. 7/6, Fig. 9/14, Fig. 10/5, 9.

[315] *Kalicz–Makkay* (1977) Fig. 7 and 13.

[316] *Dimitrijević* (1974) Fig. 7/14; *Dimitrijević* (1969a) Fig. 3/5, 7; *Kalicz* (1990) Fig. 23/10.

[317] *Kalicz* (1988) Fig. 27/10; *Gläser* (1994) Fig. 245/12; *Makkay* (1978) Fig. 25/1, Fig. 18/17; *Kalicz-Schreiber–Kalicz* (1992) Fig. 9/6, 10–11, Fig. 10/3, 11; *M. Virág* (1992) Fig. 11.

[318] *Lenneis* (2001 [2002]) Fig. 28.

[319] *Schwitalla* (1999) 28–29; *Lindig–Schwitalla* (1999).

region both as regards their fabric and their treatment, and show a remarkable similarity to the pottery from Pityerdomb and the late Starčevo sites in western Transdanubia, in spite of the great distance between them.

3.2.5. Linear patterns arranged into fields

Two pottery fragments with a rather rudimentary pattern can be assigned here. One is a base fragment bearing two L shaped lines, with the horizontal sections apparently reaching the rounded vessel base: 27/8 *(Fig. 123)*. It must in all fairness be noted that it is unclear whether this was part of a pattern arranged into fields. The other is a body sherd decorated with alternating parallel and zig-zag lines that can perhaps be interpreted as the remains of a pattern divided into fields: 30/20 *(Fig. 132)*. The linear pattern covering the almost intact animal figurine was divided into fields (11/56, *Figs 45, 146;* cp. also Chapter 6, discussing the cult finds).

A fragment from Žitkovac, assigned to the classical Starčevo phase (St. Dimitrijević's controversial Girlandoid phase),[320] can perhaps be regarded as the forerunner of ornamental patterns arranged into fields. An analogous late Starčevo vessel fragment can be quoted from Vörs,[321] and a pattern arranged into fields can also be found on a sherd and on the vessel with hand shaped lugs in the early Linear Pottery assemblage from Budapest–Aranyhegyi Road–Mocsáros.[322]

3.2.6. Linear pattern on vessel handles

These linear patterns differ from the incised ones on the vessels in that these are not incised lines; the soft clay was modelled in a manner to create a deep furrow or furrows parallel to the handle before the vessel was fired. In addition to a few uncertain, strongly worn handle fragments, the following finds can be assigned here: 9/11 *(Fig. 28)*, 12/25 *(Fig. 53)*, 24/9 *(Fig. 111)*, 27/38 *(Fig. 122)* and 30/6 *(Fig. 129);* all were vertically set handles. This decoration appears on the handle itself on a fragment from Vršac (Versec)–At, assigned to the classical Starčevo phase.[323] Four horizontally set handles of this type were found at Lánycsók, also dating to the classical phase of the culture, and the late Starčevo handles from Becsehely and Vörs–Máriaasszonysziget too bore a similar ornamentation.[324]

Finally a clay foot modelled on a human leg was similarly ornamented with a deep line or furrow running upward from the heel, made using the same technique (20/14, *Figs 101, 143*).

3.3. Smoothed-in lines

It is most fortunate that in spite of the acidic soil that wore away the vessel surfaces, quite a few fragments covered with a polished, dark red slip have survived, as have the smoothed-in lines decorating the pottery finds from the Pityerdomb settlement.

A number of different patterns can be distinguished. The presence of carelessly made smoothed-in lines is slightly surprising on the carefully made, good quality vessels covered with a polished, dark red slip, representing the fine wares. One thin-walled, biconical cup has haphazard, oblique lines beside a small knob set on the carination: 14/9 *(Fig. 53)*. Another fragment, coming from a larger storage jar with smoothed surface, has three almost, but not quite horizontal lines near the handle. Yet a third body fragment is decorated with barely visible, irregular lines: 14/5 *(Fig. 57)*.

[320] *Dimitrijević* (1974) Fig. 6/18.
[321] *Kalicz–M. Virág–T. Biró* (1998) Fig. 8a/2.
[322] *Kalicz-Schreiber–Kalicz* (1992) Fig. 4/13 *and* Fig. 3/1.
[323] *Kalicz* (1988) Fig. 14/14.
[324] *Kalicz* (1990) Fig. 23/1–2, 4, 8, 46/9; *Kalicz–M. Virág–T. Biró* (1998) Fig. 8b/11.

One of loveliest vessels from Pityerdomb could be assembled from its fragments (16/14, *Fig. 71*). Its delicate proportions, the fine dark red slip and lustrous polish would make this thin-walled vessel the pride of any South-East European site of the Starčevo and Karanovo I–II culture province. Held towards the light, the smoothed-in lines on the vessel surface become visible. In contrast to the finely crafted vessel, the smoothed-in patterns appear to have been made by an untrained hand, by a potter who had no practice in creating linear patterns of this type. The patterns of concentric curved lines appear haphazardly under the rim, on the opposite side of the vessel in bundles of two and three with a differing diameter under the carination and on the carination itself, the latter being lightly smoothed-in short, straight lines.

There is no consensus on the origins and the spread of smoothed-in linear patterns. N. Kalicz has argued that this decoration can be regarded a Criş–Körös–Starčevo legacy, characterizing the early Linear Pottery assemblages of Transdanubia and Slovakia,[325] while J. Makkay believes that the pottery sherds with smoothed-in and burnished patterns found among the many millions (!) of Körös vessel fragments in the Great Hungarian Plain were of eastern Balkanic, Aegean and western Anatolian origin.[326] They also differ on the dating of this decoration: according to N. Kalicz, this decorative technique became widespread during the period hallmarked by late Starčevo, Criş and Cîrcea–Gradešnica type assemblages,[327] whereas J. Makkay dates the appearance of smoothed-in decoration to the period between the early Körös phase characterized by white painting (phase I) and the late Körös phase in which Protovinča traits can be noted (phase III) – in other words, to the 'classical' Körös phase whose main distinguishing feature is that it lack the traits of both the early and the late phase of the culture.[328]

N. Kalicz's view is supported by two additional bits of evidence. First, fragments with smoothed-in decoration are known from late Starčevo contexts in Transdanubia, an area where this decoration was previously unknown. In addition to Kaposvár–Deseda and Gellénháza–Városrét, the finds from Babarc too included sherds decorated in this manner.[329] Second, when J. Makkay claimed that the smoothed-in decoration on early Linear Pottery vessel fragments from the Bicske–Galagonyás site could only have originated from the Körös culture of the Great Hungarian Plain, the finds from Brunn–Gebirge-II and, more importantly, from Pityerdomb were unknown. Both sites predate the Bíňa (Bény) and Bicske settlement and, moreover, a direct western Starčevo tradition can be conclusively proven for both Pityerdomb and Gellénháza. The detailed publication and evaluation of the pottery from Brunn will probably reflect a similar tendency, although with a perhaps stronger local influence. It is therefore almost certain that smoothed-in linear patterns can be regarded as a legacy of the Starčevo culture, reaching Transdanubia along the Danube and the Drava, rather than of the Körös culture.[330]

As regards the pattern burnished sherds from Bicske, the Vinča culture undoubtedly played a role in the mediation of this decoration to Transdanubia during the Thessalian Tsangli phase. A better understanding of early Vinča impacts along the Danube and in Transdanubia can be gained from newly published find assemblages and a more thorough knowledge of the final phase of the Starčevo culture. New evidence can be hoped from the investigations in the Fajsz area, begun in the autumn of 1999. The excavation of the early and late Linear Pottery single layer settlement at

[325] *Kalicz* (1988) 152–153.
[326] *Makkay* (2000) 313.
[327] *Kalicz* (1988) 152.
[328] *Makkay* (2000) 312.
[329] *Kalicz* (1990) Fig. 7/3, Fig. 35/1, Fig. 43/3; *H. Simon* (1996) Fig. 5/4; *Bánffy* (2001) Fig. 5/12.
[330] The divergence in their perception of this problem can in part be explained by the fact that N. Kalicz argues for the separateness of the Körös and Starčevo cultures, while J. Makkay holds that they are essentially variants of the same complex. *Kalicz* (1983); *idem* (1988); *idem* (2000); *Makkay* (1982); *idem* (1987); *idem* (1996).

Fajsz–Garadomb, of the Vinča tell settlement lying a few hundred meters from it and of the dozens of Körös sites around these settlements will hopefully clarify a number of problems concerning the contacts between the Körös, the Starčevo, the Vinča and the Transdanubian Linear Pottery cultures.[331]

Other clay finds

1. Spindle whorl

Flat, disc shaped spindle whorls were more widespread in the Körös–Starčevo distribution than round or biconical ones. At Pityerdomb, only one flat spindle whorl was found: 17/11 *(Fig. 82),* made from the sherd of a broken vessel by breaking off its edges until a roughly circular shape was obtained. A 4–5 mm wide hole was bored through its centre. The size of the spindle whorl and the diameter of the wooden rod that could be fitted to it corresponds to that of Early Neolithic drop spindles, used for spinning both vegetable fibres and wool. Since spindle whorls were usually made from the broken pieces of larger, thick-walled storage jars, it seems likely that spindle whorls also functioned as a weight until enough yarn for the spindle was drawn out.[332] The spindle whorls could be removed at any time and the spindle could be used as a shuttle for looms.[333]

Spindle whorls have been found on almost every Early Neolithic site in South-East Europe and they abound among the finds from the Criş, Körös and Starčevo settlements in the Banat, the Voivodina and Transdanubia.[334] A number of spindle whorls fashioned from pottery sherds are known from Lánycsók and Becsehely;[335] according to the published report, only disc shaped spindle whorls were used at Gellénháza–Városrét.[336] In spite of their relative frequency, little is known about the different types of spindle whorls since they are rarely described in detail in the publications of Early Neolithic assemblages.

2. Loom and net weight

In addition to several fragmentary pieces, one loom weight has survived intact (11/30, *Fig. 40*). In contrast to spindle whorls that show little variation, this loom weight type stands out by its unusual form. These 5–7 cm high loom weights were more or less cylindrical, widening a little downwards. Their upper and lower end was deepened, but they were not perforated.

While the so-called tomato shaped weights were specific to the Körös culture only, long, oval or slightly pear shaped weights perforated along their upper third were used throughout the entire Körös–Starčevo–Criş distribution.[337] They have been found on the latest settlements, as well as on sites that were contemporary with the early Linear Pottery.[338] Some of the loom or net weights from Gellénháza[339] were almost identical copies of the one found at Pityerdomb. In her 1996

[331] Joint research project of the Deutsche Forschungsgemeinschaft, the University of Tübingen, the Viski Károly Museum of Kalocsa and the Archaeological Institute of the Hungarian Academy of Sciences.

[332] *Ortutay* (1981) 111–112.

[333] The archaeological finds of Neolithic spinning and weaving from South-East Europe and the Aegean have been described and discussed by E. Barber. An overview of the finds from Hungary and a reconstruction of prehistoric spinning and weaving, based predominantly on Late Neolithic finds, has been written by E. Marton. *Barber* (1992); *Marton* (2001).

[334] *Kalicz* (1990) 71; *Lazarovici* (1979) Fig. 4G/18–25; *Karmanski* (1979) Fig. 5/1–9.

[335] *Kalicz* (1990) Fig. 17/4, 7, Fig. 45/1.

[336] *H. Simon* (1996) 69, Fig. 5/6–8, 11, 12.

[337] *Kutzián* (1944) Fig. 11/4; *Trogmayer* (1964) Fig. 7/10; *Raczky* (1976) Fig. 3/13–15; *Kalicz* (1990) Fig. 17/1, 5.

[338] Kőtelek–Huszársarok: *Raczky* (1983) Fig. 8/1–8; Babarc: *Bánffy* (2001) Fig. 1/11; Gellénháza–Városrét: *H. Simon* (1996) Fig. 1/7–9.

[339] *H. Simon* (1996) Fig. 5/14–15.

study, K. H. Simon did not know of any analogies to the clay weights from the site. It has since become clear that these unusual shaped loom weights represent one of the many cultural strands linking the two sites.

3. Miniature clay bead (Fig. 141)

These two finds would have remained undetected, had we not set aside large soil samples for macrobotanical analyses. The two miniature clay beads shown in *Fig. 141* were found during the flotation of these samples. Their fabric corresponds to that of the pottery and both were similarly tempered with chaff and sand. One of the slightly flattened, round beads was 4 mm large, the other was 3 mm and both were perforated in the middle. The perforation of the smaller bead was less than 1 mm, indicating the skill of the Pityerdomb craftsmen. This is reflected in the idea of making small articles, probably used as ornaments, and in that the occupants of the settlement had mastered the craftsmanship necessary for producing and firing these tiny beads. The 1 mm large perforation also indicates their skill in spinning – the perforation of the bead indicates that it was strung onto some thread and only a very finely spun, thin yarn could be threaded through such a tiny hole.

It is hardly surprising that similar finds were not recovered during earlier excavations. Clay rings (sometimes interpreted as bracelets, although this seems a little far-fetched to me) have been found on a few Transdanubian settlements of the Starčevo culture, for example at Becsehely and Gellénháza,[340] and analogous finds can also be quoted from the Great Hungarian Plain.[341] A clay ring or bead has been reported from Rumess (Romosz), a Vinča A site in the Maros Valley.[342] A small marble bead with a diameter of 1.5 cm is known from the early Linear Pottery site of Strögen in Lower Austria.[343]

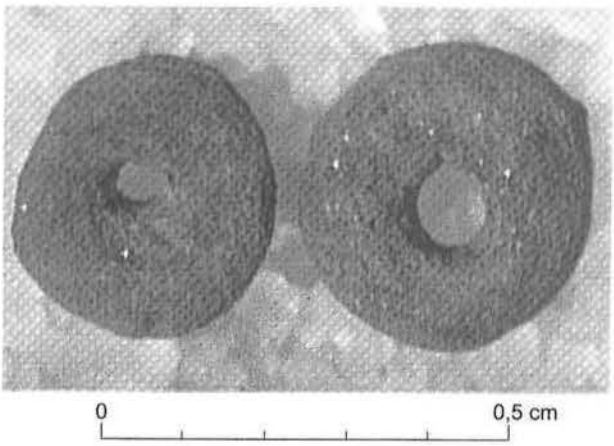


Fig. 141. Miniature clay pearls from Feature 30

4. Pintadera (Fig. 142)

The four vessel feet from Feature 12 have been described in the above. They lay near each other in the fill of the pit. The breakage surface of the object described under 12/13 indicates that it was most certainly a vessel foot. Three of the four feet had originally been part of the same vessel, the fourth came from another one. The black paint covering the breakage surface and dribbling down one side raises the question of whether the vessel foot was re-used as a pintadera.

[340] *Kalicz* (1990) Fig. 46/1; *H. Simon* (1996) Fig. 4/2–6.
[341] *Kalicz* (1990) 74, 77.
[342] *Luca* (1995–96) Fig. 5/3.
[343] *Lenneis* (2001 [2002]) 209.

The small assemblage of vessel feet seems to support this interpretation. They were collected and set aside by one of the house's occupants after they had broken off the vessel. The conscious act of collecting these vessel feet is also indicated by the fact that no fragments of the original vessels were found in their vicinity and that the feet came from two separate vessels.

The form of the vessel feet is also instructive. Leafing through the study on Neolithic and Copper Age pintaderas written by J. Makkay, one immediately notices that the objects shown in the illustrations have a more or less identical form: their base is flat, their body is conical and they can be easily held with three fingers.[344]

Most pintaderas bear a deeply or, more rarely, lightly incised geometric pattern of concentric circles, lines, zig-zags, etc. In contrast, the find from Pityerdomb did not have a design of any kind. Quoting ethnographic parallels, J. Chapman has suggested that these pintaderas had probably been used for decorating soft, organic substances, such as bread.[345] The one from Pityerdomb could hardly have been used for creating a positive pattern in some soft substance, but rather for creating circular prints of black paint.

It is possible that this pintadera was used for marking the skin of domestic animals, although the find context also allows another interpretation. Feature 12 was one of the long pits flanking the house; the clay vessel feet lay were recovered from the lower part of the fill that contained various other finds as well, and it is possible that the one covered with paint remains was used for marking the construction material, perhaps the timbers of the same length or thickness, or the posts intended for a specific area, during the construction of the house. At the same time, the paint remains exclude the possibility that the pintadera was used for body painting since resin-based black paint only melts when very hot, making it unsuitable for this purpose.

Since most pintaderas bore a deeply incised pattern of regular motifs (one of these being the 'labyrinth' motif appearing in the Early Neolithic),[346] it seems likely that they were modelled on wooden stamp seals or were their contemporary clay variants. However, the lack of a pattern is not unusual in the Early Neolithic of the Carpathian Basin and the neighbouring territories. The earliest parallel to the Pityerdomb finds is a group of pintaderas from Kovačevo that includes a conical piece resembling the one from Pityerdomb, although its base bears an incised pattern.[347] J. Makkay's catalogue lists a number of undecorated stamp seals from the Körös, the Criş and the Starčevo cultures, as well as from the Karanovo I–II province. One of these is the pintadera from Asmaška Mogila, another Early Neolithic specimen was found at Perieni in Romania, and a third comparable find can be quoted from Gracanica–Gladnice, a Starčevo site in Serbia.[348] J. Makkay also presents the finds from Hungary: one comes from his excavation at Endrőd–Szujókereszt, another one from Dévaványa–Katonaföldek, and an undecorated pintadera was also found at Csongrád–Papp-tanya and Hódmezővásárhely–Vata-tanya, all sites of the Körös culture.[349]

Noting that stamp seals were more widespread in the southern and eastern zone of the Balkans and South-East Europe in the Early Neolithic, J. Makkay argued for their Anatolian and Levantine origin. His study was written in 1984, at a time when there were still many controversial points in the chronology of European prehistory, and he can hardly be faulted for correlating sites and finds that are now regarded as part of different horizons. His claim that the use of stamp seals in the Körös–Starčevo culture was fairly general (except for the early phase of the culture), while these objects were unknown in the genetically related Linear Pottery groups, was based on the

[344] *Makkay* (1984).
[345] *Chapman* (2001b) 235.
[346] *Makkay* (1984) 75.
[347] *Lichardus-Itten et al.* (2002) Pl. 21, and Figs 19–24.
[348] For the references, cp. the catalogue to Makkay's study. *Makkay* (1984).
[349] For the references, cp. the catalogue to Makkay's study. *Makkay* (1984).

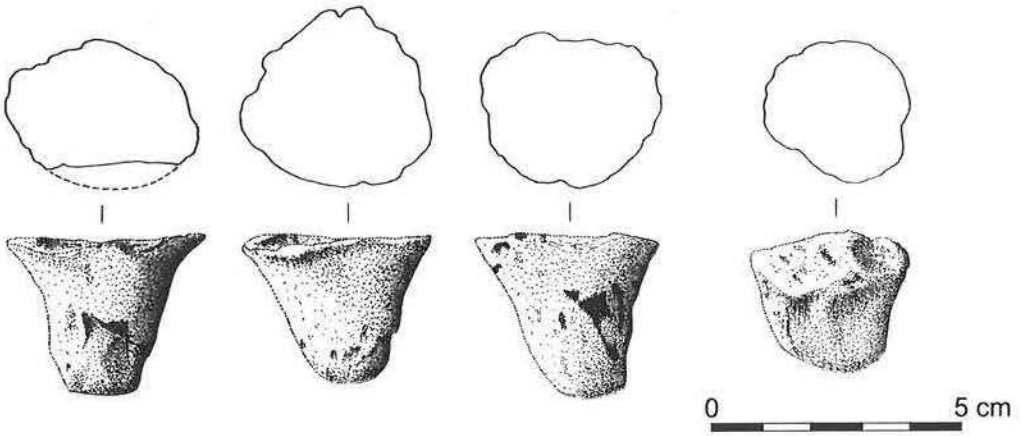


Fig. 142. Stamp seals

then available evidence.[350] Makkay quoted two stray finds, one of which has a bearing on the Pityerdomb find. The pintadera in question was found at Szakály, a site among the Tolna Hills south of Lake Balaton; Makkay assigned it to the late Körös–Starčevo culture (to the transitional Medina group in the terminology of the period) on the basis of its fabric and modelling; in his discussion of the find, he argued that in spite of the strong Körös–Starčevo cultural impact, the local population groups apparently retained their own traditions and own artefacts. His other interpretation also ran along these lines, namely that the Linear Pottery groups used stamp seals carved from wood.[351] Since the South-East European pintaderas of the Early Neolithic were modelled on wooden prototypes, another explanation must be sought for the lack of stamp seals in the Linear Pottery communities. It is in any case difficult to draw far-reaching conclusions from a single artefact type. Even the comparative analysis of the different artefact types merely outlines general tendencies at the most, rather than actual processes.

Similarly to most other finds, the pintadera from Pityerdomb can be regarded as a relic of the Starčevo culture. The fact that it was covered with black paint also supports this assumption since we know that monochrome black painting was specific to the late, Spiraloid B phase of the culture.

5. Clay artefact of unknown function

The function of a clay object that at first appeared to be a vessel fragment remains enigmatic. Since its edge is not straight, but curved, it can hardly be regarded as a pottery sherd (31/13, *Fig. 135*).

The red coloured fragment was part of a well-fired clay object made from finely levigated clay, tempered with chaff and sand and covered with a polished, dark red slip on both sides. Both its edges and sides are curved. It was probably part of an object whose lower part was vessel-like with a round cavity, while its upper part was lobed or only had walls on two opposite sides. The fragment comes from this part of this enigmatic object. It may have been part of a small altar, but owing to the small size of the surviving fragment, the original cannot be reconstructed and this remains a hypothesis. This is the reason that I have not assigned this fragment to the altar finds.

Two other finds must also be mentioned among the unusual and enigmatic clay artefacts. Both come from carefully made, polished objects made from finely levigated clay. One is the fragment of a probably round, downward curving and thinning object, perhaps a lid (30/24, *Fig. 132*). The other probably also comes from a round object that had a perforation with a diameter

[350] *Makkay* (1984) 82.

[351] *Makkay* (1984) 82–83.

of 4–5 cm in its centre (30/25, *Fig. 132*). It is possible that it comes from a ritual object, but in the lack of analogies, I did not include it among the altars.

6. Burnt daub

Finally, mention must be made of the burnt daub fragments, one of the most abundant categories of finds, recovered from the fill of almost every settlement feature. Their weight and number has been described in the section on the settlement features. Here I will briefly describe their state of preservation.

Most of these burnt daub fragments survived in the form of smaller lumps. Many preserved the imprint of burnt organic matter, such as grass and perhaps cavings. The smaller and larger impressions and the pitted structure of thinner pieces suggest that chaff and grass seeds had also become mixed up with the clay. The most important information, however, was provided by the burnt daub fragments that preserved the imprints of twigs and rods on one side and had a flat, smooth surface on the other. These daub fragments undoubtedly came from the house walls; the smoothed side could be either from the outer, or the inner side of the wall. Larger burnt daub fragments without twig imprints had probably been part of the interior furnishings of the house: the clay plastering of the hearth, parts of a bench or perhaps the clay covering the upright timbers.

Summary

One point that emerges clearly from the above is that the best analogies to the pottery finds from Szentgyörgyvölgy–Pityervölgy can be quoted from three sites in the same area: Vörs–Mária-asszonysziget, Andráshida–Gébárti-tó and Gellénháza–Városrét. Two of these sites can be assigned to the latest Starčevo phase, while the finds from the third, the Andráshida settlement are described as follows: "It would appear that the finds can best be likened to the Spiraloid B assemblages of the Starčevo culture, although traits of the early Linear Pottery also make their appearance."[352] The finds from several other sites also have much in common with the pottery from Pityerdomb – the reason that these are mentioned in second place is that the assemblages from these sites were either recovered from small soundings or were surface finds. Still, the high number of sites that can be mentioned in this respect is noteworthy: Sármellék, Zalavár, Vonyarcvashegy, Révfülöp, Balatonszepezd, Balatonszentgyörgy and various other sites in the Balaton Uplands, as well as Görgeteg, lying in the Rinya Valley that connects the western Balaton area with the Drava.

One specific group, the Tapolca group of the early Linear Pottery has been recently distinguished by B. Előry, K. Sági and Z. Törőcsik.[353] They published the results of their field surveys in two rather confusing articles and a monograph, but owing to the many mistakes, they remained practically unnoticed. It seems to me that they correctly perceived the significance of the early Linear Pottery sites in the Keszthely region and of the altar fragment from Kéthely. It is my belief that in addition to the identification of a cultural group based on a number of traits specific to western Transdanubia, a few other important conclusions can also be drawn.

A number of other early Linear Pottery sites could here be quoted[354] – and shall be quoted elsewhere – but in this section I shall only discuss the sites with analogous pottery finds. The latter sites have been assigned to the early Linear Pottery culture;[355] however, it is rather obvious

[352] *Horváth–H. Simon* (1997) 23.

[353] *Sági–Törőcsik* (1989); *Előry–Sági–Törőcsik* (1991). Cp. also Chapter 9.

[354] *Torma* (1969); cp. also the section on the early Linear Pottery sites in the Balaton region in Chapter 9.

[355] *Kalicz* (1988); *idem* (1993); *idem* (1995); *Kaufmann* (1987).

that these sites differ from the horizon marked by the Bicske–Bíňa–Becsehely II–Medina sites in that the pottery is dominated by Starčevo features.

The Linear Pottery is in many respects regarded as a descendant of the Starčevo culture and it is therefore hardly surprising that this is reflected in the pottery, especially in the early Linear Pottery phase. It seems instructive to briefly list the traits that are shared by both cultures, as well as the ones that can be demonstrated in the ceramic inventory from Pityerdomb and other contemporary Transdanubian sites, but did not survive in other pottery assemblages and in other phases of the Linear Pottery culture.

Vessel forms

The storage jars of the Starčevo and the Transdanubian Linear Pottery are more or less similar, except for their base. While rounded and straight bases occur in both cultures, slightly thickened and profiled bases can only be found in the Starčevo culture and in the Pityerdomb type pottery assemblages. The vessel spout from Pityerdomb, whose best analogies can be cited from the Starčevo culture, was probably part of a storage jar.

Most bowl types are typical for both cultures: these include S profiled, hemispherical and bomb shaped bowls, as well as conical ones and biconical bowls whose upper part is not incurving. Biconical bowls with incurving upper part can, with a single exception,[356] only be found in the Starčevo culture, at Pityerdomb and at the Transdanubian sites mentioned above. The same holds true for the cups: hemispherical and biconical cups are known from both cultures, while biconical cups with incurving upper part from the Linear Pottery period are of the Pityerdomb type. We know that vessel pedestals gradually became taller; the pedestals of the Starčevo culture are usually lower than those of the Linear Pottery culture, although low pedestals do occur in some early Linear Pottery assemblages. Ring bases have to date only been found in Starčevo contexts and in Pityerdomb type assemblages.

Miniature vessels are rare in the Linear Pottery culture. They are more typical for the Balkans and they became truly popular at the end of the Early Neolithic and in the Vinča culture.[357] Several miniature vessels have been found at Pityerdomb and at Gellénháza, and a similar finds is known also from Görgeteg in Somogy county. This site lies in the Rinya Valley, one of the valleys connecting Lake Balaton with the Drava. Only one single other miniature vessel is known from the early Linear Pottery, a fragment found at Frauenhofen in Austria. Similarly to these miniature vessels, suspension vessels of the type found at Pityerdomb and Gellénháza are also specific to the pottery of the Early Neolithic.

Vessel ornamentation

The application of a dark red slip and the polishing of the vessel surface is again a feature characteristic of the Early Neolithic. In spite of the rather badly preserved and worn surface of the pottery finds from Pityerdomb, the high proportion of red slipped and/or polished sherds is noteworthy. The black-topped technique appeared in the Spiraloid phase of the Starčevo culture and in the pottery of contemporaneous groups, for example in the "Protovinča" phase of the Körös culture in the central and southern part of the Great Hungarian Plain, the pottery of the Szatmár II phase on the northern fringes, in the earliest Vinča period in the south and in the Tsangli phase of the Dimini culture in the southern Balkans. The Pityerdomb site fits nicely into this chronological horizon and the use of the black-topped technique at the site provides additional

[356] The vessel in question was found at Szentlőrinc.

[357] Cp. the overview by Z. Letica. *Letica* (1967).

proof for its chronological position. Finally, the use of black paint for pottery decoration and other purposes can be regarded as a Starčevo trait. The observations made during the excavations and the indirect evidence (paint container, the vessel foot used as a pintadera) suggest that black painting cannot have been a rare custom.

The appliqué ornaments, the notched rims, the different types of ribs and knobs are common to both the late Starčevo phase and the early Linear Pottery, and they are thus unsuitable for distinguishing Pityerdomb type assemblages.

One of the major prehistoric cultures of the Carpathian Basin and of Central Europe was named after the linear patterns ornamenting its vessels. One might be justified in assuming that these designs, previously unknown, had been invented by the Linear Pottery communities. Two points must be noted in this respect. First, the number of linear ornamented pottery sherds was surprisingly low in the ceramic inventory, a rather large assemblage compared to the quantity of finds from other early Linear Pottery sites. Some of these linear patterns correspond to the already known early Linear Pottery motifs, while others are rather shakily drawn uneven, crooked lines, giving the impression that the patterns reflect a stage of learning and experimentation. The second is even more surprising: pottery fragments with linear motifs appear in the Spiraloid B phase of the Starčevo culture, even if sporadically. In some cases, the excavator did not believe her eyes and regarded the sherds decorated with irregularly incised lines found during the excavation of a Starčevo settlement as intrusive finds.[358] Similar vessel fragments have also been recovered on Croatian sites, such as Vinkovci–Marketplace and Krstičeva–Humka, but also on later Starčevo settlement in Transdanubia, such as Kaposvár–Deseda, Babarc and Gellénháza. Several linear ornamented fragments have been found at Vörs–Máriaasszonysziget. The deep furrows on the handles of storage jars are peculiar to the Starčevo culture and aside from the Pityerdomb type pottery, this decoration does not occur in the Linear Pottery culture.

In the light of the above, we may perhaps assume some degree of relatedness as regards the spiral meander patterns since this distinctive motif of the early Linear Pottery may have been inspired by the similar, but painted patterns of the Early Neolithic cultures, including the Starčevo culture, whose latest phase was named after these spirals by St. Dimitrijević, the renowned prehistorian.

It is clear from the above that the late Starčevo culture and the find assemblages from Pityerdomb and the other related western Transdanubian sites occupied by sedentary communities share numerous similarities. The pottery from Pityerdomb shows considerably more Starčevo, than Linear Pottery traits. It is not mere chance that the sites yielding material closely resembling the one from Pityerdomb were alternately dated to the late Starčevo or early Linear Pottery culture.

It is my belief that the pottery assemblage reflects the contemporaneity of the two phases in western Transdanubia, the strong cultural relations between them and the ethnic mixing of the two populations. The emergence of the Transdanubian Linear Pottery has been traced in this area and it can also be demonstrated that Starčevo groups actively participated in this process, spanning some two or three generations.

It follows from the above that the settlements with pottery showing strong Starčevo traits differ from the Bíňa–Bicske type and early Lower Austrian sites. It is my impression that their chronological position also differs, and that we may definitely speak of regional differences, supported by the rather late absolute dates for Pityerdomb. It must also be borne in mind that E. Lenneis, one of the most outstanding scholars of this period, has labelled the finds from Neckenmarkt and Strögen "Ältere Bandkeramik", reserving "Älteste Bandkeramik" for the Pityerdomb type finds from the Pityerdomb–Brunn settlements.[359]

[358] *H. Simon* (1996) 60 and Fig. 3/4.

[359] *Lenneis* (2001 [2002]) 7.

The last question that remains to be answered is the identity of the population encountered by the occupants of the Starčevo villages in the Balaton region. It is perhaps not mere chance that the best analogies to the Pityerdomb pottery could be quoted from the late Starčevo culture, especially from northernmost sites of its distribution. The distinctive traits of the northern and western sites, the changes in the pottery compared to the Starčevo assemblages from southern Transdanubia could be well observed at Vörs and Gellénháza.[360] The northern and western fringes of the Starčevo distribution lay in western Transdanubia, the northern part of Zala county and the western Balaton Basin. The halt in the advance of the Starčevo culture can in part be attributed to ecologic factors (see Chapter 9). At the same time, the changes in the material culture cannot be explained by an internal transformation alone. It seems more likely that the find assemblages from Pityerdomb, Andráshida, Gellénháza, Vörs, Zalavár, Sármellék, Vonyarcvashegy, Kéthely, Révfülöp and Balatonszepezd can be regarded as the legacy of a population that absorbed cultural influences from the Starčevo culture and we may perhaps also assume a certain degree of ethnic mixing. These communities did not populate the region too densely and little or no evidence of their earlier lifeways has survived in the archaeological record.

This is the most that can be concluded from the analysis of the pottery finds. The evaluation of the cult finds, the lithic inventory, the subsistence patterns, the settlement network and the trade contacts provided a wealth of additional information in this respect.

[360] For the changes in the find assemblages from the periphery of the Starčevo distribution, cp. *Bánffy* (2000a) and *Bánffy* (in press).

Chapter 6

CULT FINDS AND THEIR SIGNIFICANCE IN THE MESOLITHIC-NEOLITHIC TRANSITION

Idol head *(Fig. 143)*

The single idol fragment came to light in Feature 3, in a shallow depression inside House I. The fragment did not lie on the occupation surface, but in the fill. It is a light yellowish-red, poorly fired, 4.2–4.5 cm high cylindrical object with a diameter of 2.7 cm and a roughly circular section, made from poorly levigated clay tempered with chaff. Imprints of larger cereal grains and chaff can be seen on the breakage surface. There is an oblique incision on the rather worn surface, probably marking the contour of the tilted-back head. Aside from this incision, probably symbolizing the chin, the fragment has one other characteristic trait: the head is elongated above the face and a series of tiny clay globules can be made out on the rear side, perhaps an indication of the coiffure.

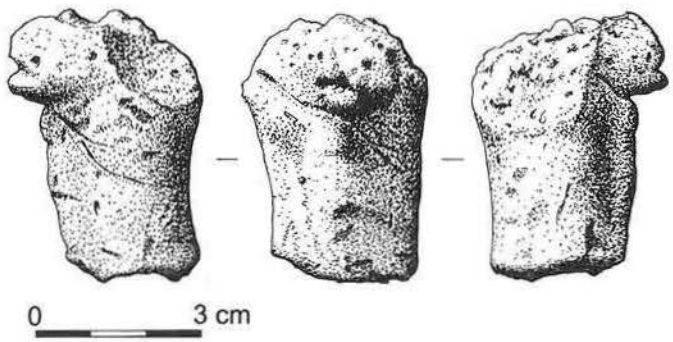


Fig. 143. Idol head

Seeing that this is the single idol found on the settlement, it is all the more regrettable that it broke at the neck since there is no way of establishing whether the back was decorated with a herringbone pattern of oblique incisions or dots. These two distinctive features of early Linear Pottery idols have been widely discussed during recent years since they are believed to shed light on the mindset of Linear Pottery communities and to clarify their divergence from early South-East European statuettes.[1]

Two different types of imagery can be distinguished in the Early Neolithic of Transdanubia: one rooted in the Early Neolithic traditions of the Balkans and transmitted northward by the Starčevo culture, the other showing the typical features of Linear Pottery statuary. Fragments of buxom, steatopygous idols with emphatic female features have been found at Zalavár and Medina, as well as at Gellénháza, lying near Pityerdomb.[2] The female sexual organ is strongly accentuated on the Medina fragment. Good parallels to this statuary can be quoted from the Körös culture.[3]

[1] *Höckmann* (2001) with further literature.

[2] *Gläser* (1994) Fig. 65; *Kalicz–Makkay* (1972a) Fig. 3/10; *H. Simon* (1994) Fig. 1/1a-c.

[3] *Kutzián* (1944); *Raczky* (1979–80); *Karmanski* (1990); *Trbuhović–Karmanski* (1993).

The other type appeared at roughly the same time as the early Vinča figurines: a cylindrical body, often without an indication of the gender or with barely indicated female features,[4] and a triangular, often tilted-back head and incised or applied motifs on the head, perhaps indicating the hair.[5] Two idols from Bicske–Galagonyás (House 1) and a fragment from Aba–Felsőszentiván-Ángyihegy can be assigned to this type from Transdanubia.[6] The coiffure on the Aba idol and on one of the specimens from Bicske resembles that of the Pityerdomb fragment, although the small globules marking the hair are more carefully modelled. Each of the idols quoted here was carefully made: in addition to a black polished surface, traces of pastose red paint can also be observed among the hairlocks of the Aba idol. A comparable idol head has recently come to light during the excavations preceding the motorway construction in the Balatonszárszó area, where a settlement made up of roughly fourty longhouses and an enclosure is now being investigated.[7]

J. Pavúk published a comparable idol head with a similar hairstyle from Velký Grob (Magyargurab) near Bratislava (Pozsony). He considers this finds to have been an applied ornament rather than part of a statuette, even though the posture of the idol head, as far as it can be made out from the published photo, does not support this interpretation.[8] Over ten idol fragments have come to light at the Brunn/Gebirge II site near Vienna.[9] The most interesting specimen of this assemblage, the largest idol finds from the Linear Pottery culture province known to date, is unfortuntely fragmentary and, sadly, its head is missing. It reconstructed height is 25 cm.[10] Another fragment has been reported from Breiteneich–Kalkgraben in Lower Austria, found together with early Linear Pottery vessel fragments.[11] Incised zig-zag lines indicate the hair or some kind of head ornament on the idol head from the early Linear Pottery site at Perchtoldsdorf near Mödling.[12]

Another comparable idol, reconstructed as a sitting figure holding a vessel in its lap, comes from Würzburg. The specimen from Gaukönigshofen has the characteristic head posture and coiffure and its back is decorated with a V or herringbone pattern resembling the decoration on the Bicske idol.[13] A similar idol head with a depiction of hair curls is known from the Eilsleben site, whose finds show a remarkable affinity with the Transdanubian early Linear Pottery assemblages.[14] Finally, another good parallel can be quoted from Weimar–Ehringsdorf.[15]

The chaff and other coarse organic matter used for tempering the poorly fired, porous idol head from Pityerdomb link this find to the Starčevo culture. The early Linear Pottery finds from this region are usually more finely made. Any find diverging from this pattern, such as the altar fragment from Kéthely near Lake Balaton, can most likely be associated with the Starčevo culture or the Early Neolithic of the region. At the same time, the tilted-back head, the incised line marking the chin and the coiffure of curls can be clearly made out in spite of the worn surface and the rather poor modelling – these features link the Pityerdomb fragment to the statuettes of the early Linear Pottery and, indirectly, to the early Vinča pieces. This is again one of the finds that cannot be definitively linked to either of the two dominant cultural traditions.

[4] As far as I know, this was first noted by O. Höckmann: *Höckmann* (1965).

[5] *Brukner* (1974) Figs 41–42 and Figs 43–49; *Karmanski* (1977) Fig. 14/3a-d.

[6] *Makkay* (1972) 18; *Makkay* (1975a) 5, and Fig. 1. The idol head from Sukoró–Tóradűlő represents another type, although some kind of head ornament can also be made out on this piece.

[7] I would here like to thank T. Marton and K. Oross for kindly showing me the finds.

[8] *Pavúk* (1980a) 63, Fig/1a-b.

[9] *Stadler* (1999) 4; *Lenneis* (1995) Fig. 5. 4.

[10] This find will be published by S. Hansen.

[11] *Winter* (1984) 225, Fig. 36.

[12] *Berg–Maurer* (1998) 29, 94, and Fig. 18.

[13] *Wamser* 1980.

[14] *Kaufmann* (1986) Fig. 6; *Kaufmann* (1991): Fig. 4/9.

[15] *Höckmann* (1995) Figs 1–2.

One of the fragments from the Gellénháza–Városrét site may offer important clues for the cultural attribution of these finds. Published together with the steatopygous fragment mentioned above, this fragment was originally interpreted as part of an altar.[16] It was indeed rather obvious to regard the amorphous, poorly modelled cylindrical object that did not come from a vessel, but had a curved-back extension, as an altar leg with a part of the altar's horizontal section. A closer look at this find, however, revealed a remarkable similarity with the Pityerdomb idol fragment: the curved-back section could be an applied ornament symbolizing the coiffure on a slightly amorphous idol head. If this was indeed the case, we have evidence for the appearance of a curly-haired, not particularly 'feminine' idol type in a Starčevo context – a type that was perfected later, in the early Linear Pottery culture. It seems most unlikely that the idol head and the steatopygous fragment were part of the same statuette in view of the differing colour and fabric of the two fragments.

Finally, we should perhaps recall a suggestion made by O. Höckmann some twenty years ago.[17] Based on an idea first put forward by H. Maurer, an amateur archaeologist active in Austria,[18] O. Höckmann suggested that the obliquely incised lines on the idol backs marked the ribs, while the vertical line symbolized the spine. This "X-ray" style had more in common with the bone medicine and bone magic of the northern, hunter-fisher groups than with the imagery of the South-East European farmers. The depiction of the skeletal bones or of individual bones was believed to be a reflection of early shamanistic beliefs.[19] Höckmann pointed out that in contrast to the emphatically feminine depictions of the Early Neolithic in the Balkans, the statuettes of the Linear Pottery culture could be regarded as virtually genderless since the feminine nature of these idols was rarely and less markedly indicated. Although he also mentioned that similar obliquely incised lines appeared on the back of a few statuettes of the Vinča–Tordos phase and quoted these finds as possible counter-arguments, in the end he opted for the "X-ray style", the depiction of the skeleton on the idol body.[20]

Although Höckmann's cautiousness was fully justified, the idea – utterly unacknowledged at the time – that the imagery of the Central European Linear Pottery had perhaps retained vestiges of the beliefs of the earlier non-sedentary, hunter-gatherer communities can today be set in a new perspective. The growing interest in the possible interaction between Mesolithic and Neolithic communities has resulted in exciting new evidence indicating a possible mixing between the two populations and, also, the cultural impact of the Mesolithic communities on the Balkanic immigrants – and thus the possibility of a blending between the two sets of beliefs should hardly be rejected out of hand.

S. Hansen's argument harmonizes with the above possibility. He assumed that the abandonment of the original South-East European heritage, including figural art, during the Central European development and transformation of the Linear Pottery culture can be interpreted as these communities' response to the challenge posed by the changed circumstances.[21] The changes in the ethnic composition of these communities may also have played a role in this transformation. At present, we can only take note of this point; any conclusions would certainly be premature. There is need for further research in this field and, obviously, for further idol finds offering more information than the idol fragment from Pityerdomb.

[16] *H. Simon* (1994) Fig. 1/2a-c.
[17] *Höckmann* (1985a) 98–102.
[18] *Maurer* (1982) 13–26, and Fig. 28/8. This possibility was also discussed by L. Wamser: *Wamser* (1980).
[19] *Eliade* (1982) esp. Chapter 5, part 6–7, 159–161.
[20] *Höckmann* (2001) 79.
[21] *Hansen* (2001) 450.

Human foot representation *(Fig. 144)*

The 7.1 cm high fragment modelled on a human foot lay on the debris covering Feature 20, the hearth of House II. It probably fell there together with other pottery and burnt daub fragments when the house perished and its roof and walls collapsed. The findspot therefore reveals little about its original use. We did not find the other foot or any fragments from the same object (a statuette or an anthropomorphic vessel).

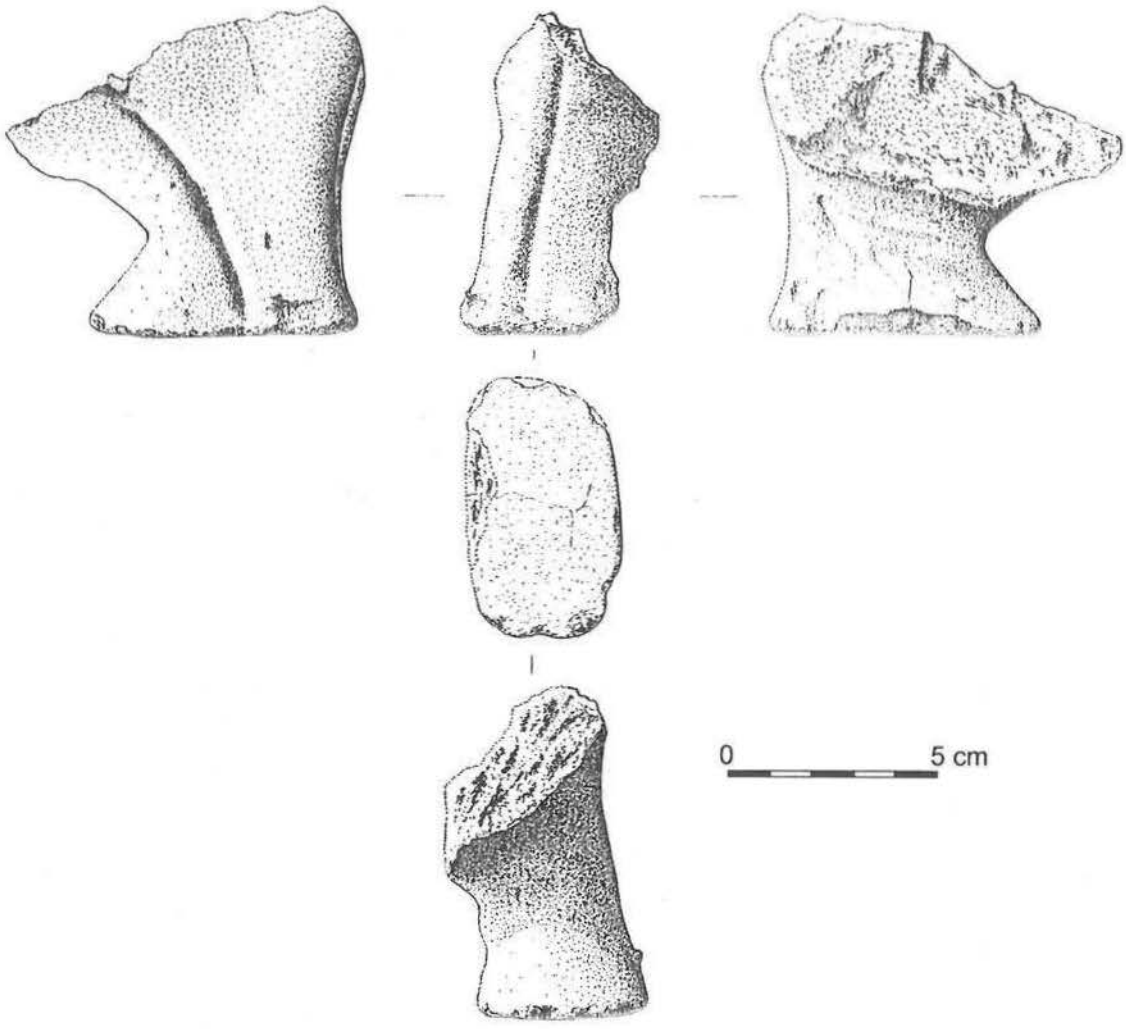


Fig. 144. Leg of an anthropomorphic vessel

The well-fired, blackish-red clay foot was made from finely levigated clay tempered with chaff, sand and crushed pottery. Its curve reveals that it was a left foot, indicated also by the fact that it was decorated on the back part and on the exterior. It is ornamented with a straight line at the heel and with a deeply incised curved line on the outer side. The toes were not depicted. The sole is flat, meaning that the object to which it belonged stood firmly on the ground.

Although it is quite possible that the fragment came from a solid statuette, its proportions also allow another reconstruction. It is my belief that the rather massive and stable foot comes from the lower part of an anthropomorphic vessel. It shall be shown below that most analogies to this find similarly came from anthropomorphic vessels or hollow statuettes.

The first analogous find whose proportions resemble those of the one from Pityerdomb, is a human foot decorated with white on red zig-zag lines from a larger statuette, recovered from the Preseskło layer of the Tsangli site.[22] A squat vessel resting on two human feet and decorated with white on red painting was found at the Rakitovo tell settlement of the Karanovo culture in Bulgaria.[23] The right and left foot can be well distinguished. The fragment of a hollow anthropomorphic vessel resting on two feet from Cîrcea in Romania[24] can also be quoted from among the similar finds, as can a hollow foot from a similarly squat vessel found at Ostrovul Golu, a site assigned to the Körös (Criş) horizon.[25] Drawing nearer to Transdanubia, the next such finds were brought to light at Mostonga, a settlement of the Starčevo culture. The anthropomorphic vessel from Mostonga I can be regarded as one of the best parallels to the Pityerdomb find.[26] The hollow vessel depicting a steatopygous figure ends in a solid foot. The divided rear part of the vessel is decorated with a spiral pattern. It seems to me that the Pityerdomb fragment broke off a similar vessel. The single difference between the two foot fragments is that the one from Mostonga is less carefully modelled: the two feet do not extend forward and there is no difference in the modelling of the right and left foot. The anthropomorphic vessel fragment from Mostonga II represents the same type, but it is unclear from the description whether or not the foot was hollow.[27]

While the three well-known anthropomorphic vessels of the Körös culture found at Gorzsa, Öcsöd and Rákóczifalva[28] have much in common with the ones from Mostonga, they differ markedly from the specimen found at Pityerdomb in that the feet of these vessels are not modelled separately, but resemble two chubby columns fitted together. The lower part of the anthropomorphic vessel found at Rákócziújfalu–Cseber-ér has divided feet and the vertical lines resembling channelling can be regarded as a decoration resembling the one on the Pityerdomb fragment.[29]

The above list of analogous finds may seem rather poor, but it must be borne in mind that anthropomorphic vessels resting on feet are rare finds. Conspicuously few cult finds are known from the northwestern Starčevo distribution: the few known pieces come from statuettes or altars. Only one single idol and a few altar fragments have so far been found in Transdanubia. The Transdanubian Linear Pottery assemblages are similarly poor in such finds. O. Höckmann's detailed catalogue of the Linear Pottery cult finds, assembled in 1972, contained a single anthropomorphic vessel fragment, the one found at Tiszacsege in eastern Hungary, assigned to the Szatmár II group.[30] In his overview of the Transdanubian Linear Pottery written some twenty years later, R. Gläser mentions a single find of a human foot: a formerly unpublished fragment from Somogyapáti. His description would suggest that this fragment was part of an idol, perhaps depicted in a sitting posture with bent feet.[31]

As regards the archaeological legacy of the early Linear Pottery, the situation is more or less the same in the regions north and west of Hungary. The foot fragments from Mužla–Čenkov, Dvorý nad Žitavou and Breiteneich probably came from statuettes,[32] similarly to some other fragments, such as the ones from Poigen and Röhrawiesen.[33] The foot fragments from Eggendorf

[22] *Wace–Thompson* (1912) Fig. 76 k.

[23] *Raduncheva* (1976) Fig. 5; *Matsanova* (1996) Fig. 6/1a-c. The latter study mentions yet another similar fragment: *Matsanova* (1996) Fig. 6/2. Cp. also *Macanova* [sic!] (2002).

[24] *Nica* (1977) Fig. 12/3.

[25] *Lazarovici* (1979) Pl. 10/27.

[26] *Karmanski* (1968) Fig. 21.

[27] *Karmanski* (1977) Fig. 3.

[28] *Gazdapusztai* (1957) 3–13; *Kutzián* (1944) Pl. 12/10a-b; *Kalicz* (1970) 4 (first published here).

[29] *Raczky* (1979–80) Fig. 10/7.

[30] *Höckmann* (1972) 204; *Kalicz–Makkay* (1977) Fig. 4/1.

[31] *Gläser* (1994) 413.

[32] *Kuzma* (1990) 437; *Pavúk* (1969) 326, Fig. 40/5, 7; *Maurer* (1981) 86, Fig. 14/2.

[33] *Berg–Maurer* (1998) 94, *Fig. 16, and 96: Fig. 24.*

am Walde and Obergänsendorf had wide, flat soles, suggesting that they had perhaps supported a vessel.[34] The latter fragment, however, can probably be assigned to the late Linear Pottery phase. The date of two comparable foot fragments published in J. Berka's study is uncertain.[35] It is possible that the stray finds from Střelice in Moravia and Großweikersdorf in Lower Austria can be assigned to the early Lengyel and Moravian Painted Pottery culture respectively.

The above would suggest that the clay foot from Pityerdomb, probably part of a larger vessel, has little in common with the anthropomorphic vessels of the early Linear Pottery of Central Europe. It shares many more similarities with the statuary of the South-East European Early Neolithic, specifically with the anthropomorphic vessels of the Starčevo–Körös culture.

Fragment of a vessel with hand shaped lug[36] *(Fig. 145)*

In addition to the animal figurine (to be discussed below), Feature 11 also yielded a number of other anthropomorphic fragments. A great number of finds lay in the roughly 30 cm thick layer under the occupation surface and on the occupation surface itself. Many of these finds cannot be regarded as discarded articles since they were consciously aligned to the north and laid beside each other. A 40 cm long whetstone lay beside a large, burnt clay plaque and the animal statuette with its head facing north was found near these articles. The fragments of the anthropomorphic vessel lay near them, scattered on the occupation surface.

The belly fragment of a large, biconical vessel decorated with an incised spiral meander was found in the immediate vicinity of four sherds from another very similar vessel. The belly fragment was probably not part of the anthropomorphic vessel; its special function is indicated by the black paint preserved in its interior, some of which was also smeared over the vessel's exterior. The significance of the resin-based black paint remains recovered from a soil type that does not normally preserve paint is immense since it suggests that the black painted spiral patterns of the Starčevo culture were perhaps still used for vessel decoration. These finds indicate the unusual nature of the archaeological context in which this anthropomorphic fragment with a special function was found.

The fragment in question was assembled from four smaller fragments that outlined the greater part of one side of the original vessel (11/54, *Figs 39–40, 145*). The fragment measures 17.4 cm x 12.6 cm, the wall thickness is 0.7 cm under the rim, 1.3 cm under the carination and 1.7 cm under the hand shaped lug. Although the rim is missing, the reconstructed rim diameter was around 24–26 cm. The vessel was made from poorly levigated clay tempered with chaff and sand, and it had a "sandwich" core (red exterior and interior, black core). The vessel was fired at a high temperature in an oxidizing atmosphere, resulting in a purplish-red, slightly porous vessel surface.

Slightly larger than the average biconical vessel, this pot could be assigned to the category of household pottery on the basis of its fabric, firing and wall thickness, especially in view of the fact that carefully fired wares covered with a polished slip made from finely levigated clay with sand tempering were not uncommon at Pityerdomb. However, its decoration suggests that this was not an ordinary vessel – an important *caveat* that household pottery and fine wares cannot be separated automatically on the basis of their fabric and wall thickness. A 5.7 x 7.8 cm large spiral meander decorates the upper part of the vessel; this motif continued upward in another spiral meander. A 1 cm wide finger impressed rib runs along the carination. The flat lug set on this rib has a 3 x 4.3 cm large oval terminal bearing four deep incisions on its upper part, dividing the rim into five parts, probably corresponding to the five fingers of the hand.

[34] *Berg–Maurer* (1998) 98, Fig. 37, and 99, Fig. 40.
[35] *Berka* (1926) Fig. 25/4, Fig. 26/1.
[36] Cp. also *Bánffy* (2002a).

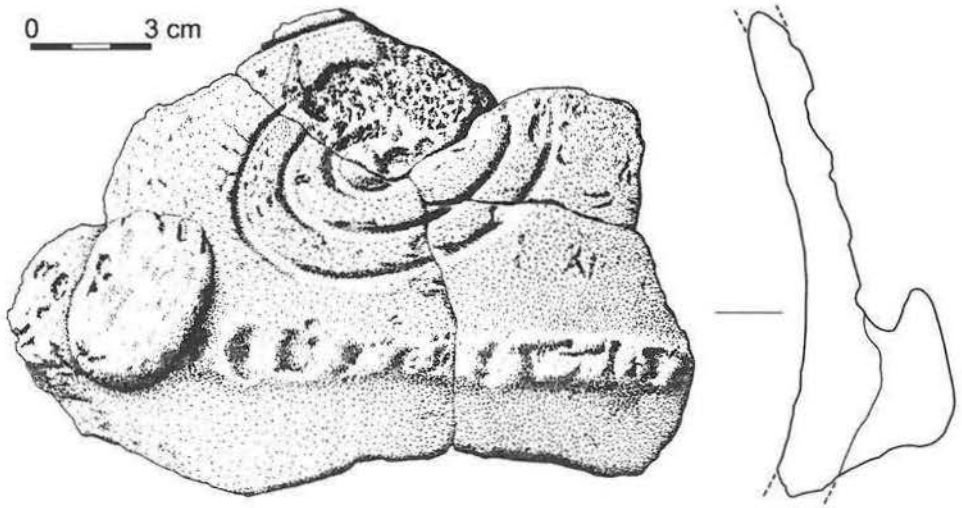


Fig. 145. Vessel profile with human hand shaped lug

Although the vessel with the hand shaped lug from Pityerdomb is hardly unique either as regards the contemporary early Linear Pottery assemblages or the South-East European Early Neolithic, it is by no means a common find.

The most direct link is with two finds from the Danube region, both of which have been dated to the early Linear Pottery culture. Hand shaped lugs were applied to a vessel found in the Fajsz area and to one from the Budapest–Aranyhegyi Road–Mocsáros site. The specimen from Fajsz has three fingers, the one from Budapest–Aranyhegyi Road is divided into several fingers with tiny grooves.[37] The finds from Méhtelek–Nádas, a site of the Transylvanian branch of the Körös culture dating to roughly the same period as the Pityerdomb site, included a vessel fragment bearing a hand in relief.[38] A similar relief, depicting a hand with four fingers, was applied to the side of a Starčevo vessel found at Lepenski Vir.[39]

This tradition can be traced in the early phase of the Middle Neolithic both in Hungary and in regions lying to the southeast. Two vessels of this type have been found at Suceveni in Romania: one has an incised hand, the other has a human hand in relief.[40] Comparable vessels can be quoted from Dodeşti, from Tordos in Transylvania and from Parţa (Parác) in the Banat.[41]

The depiction of human hands on vessels was not unknown in Central Europe, although their occurrence is sporadic. N. Kalicz mentions finds of this type from the Notenkopf and the Zselíz phase,[42] and similar vessel fragments can also be quoted from Tésa and the Nógrádverőce area, collected during field surveys.[43] A comparable vessel has been published from Mohelnice in Moravia,[44] as well as from Nobitz in Germany.[45] When reviewing the anthropomorphic vessels of the late Linear Pottery culture, it must be noted that the hands set on the sides of the well-known Janus vessel from Békásmegyer resemble the ones of the early Linear Pottery phase.[46]

[37] *Kalicz* (1993) Fig. 21/7; *idem* (1994) Fig. 5/7; *Kalicz-Schreiber–Kalicz* (1992) 67, Fig. 3/1; *Kalicz* (1995) Fig. 15/1.

[38] *Kalicz–Makkay* (1976) Fig. 6/2.

[39] *Dimitrijević* (1979) Pl. 18/3a-b.

[40] *Niţu* (1973–74) Fig. 2/1, 4.

[41] *Lăzar* (1974–75) 16, Fig. 6/a-b; *Tringham* (1971) Fig. 19/1.

[42] Neszmély: *Kalicz* (1988) 215, Fig. 93/1–3.

[43] Tésa–Majori-dűlő és Nógrádverőce–Vágóhíd: MRT 9, sites 20/1 and 30/1, Pl. 4/1– 2.

[44] *Tichý* (1958b) Fig. 49/1, 8–9.

[45] *Kaufmann* (1961) 6–2: 55–57; *Pavlů* (1966): 703, 220.

[46] *Tompa* (1937) Fig. 8/3.

The application of lugs and knobs depicting a human or animal figure to the vessel was customary in both the Alföld Linear Pottery and the Central European (Transdanubian) Linear Pottery culture. These lugs were usually animal shaped. One notable exception is a lug found at Tolcsva–Olaszliszka that is practically identical with the hand shaped lugs as regards its size, form and the grooves along its edge, but it depicts a human head.[47]

Similar lugs modelled on the human head have been found on several early Linear Pottery sites in Lower Austria. On these pieces, the grooves indicating the fingers in the cases of hand shaped lugs were probably used to depict the hair.[48]

This tradition, fading slightly in the Middle Neolithic, re-surfaced in the Szakálhát and early Tisza complex more vigorously and expressively, in the form of anthropomorphic vessels with the upper arms – sometimes sporting a Spondylus bracelet – pressed against the body or with upheld lower arms and hands, resembling the early Linear Pottery depictions.[49] The relief-like depiction of the human hand, known from the Early Neolithic, appears on vessels from Battonya–Gödrösök.[50]

Evolving from the Central European Linear Pottery tradition, the anthropomorphic vessels with upheld hands of the Lengyel–Moravian Painted Pottery culture can probably be assigned here, even if indirectly. Suffice it here to quote two sites: the early Lengyel settlement at Svodín (Szőgyén), where vessels of this type were deposited into burials as grave goods[51] and the contemporary Aszód settlement and cemetery whose finds included a vessel with human hands. The rim of the oval hand was notched, recalling the depiction on the Pityerdomb vessel. Interestingly enough, other parts of the human body are barely indicated or not at all on these Lengyel vessels: the anthropomorphic nature of the vessels is indicated by the hand depictions on the two sides of the vessel body.[52]

Similarly to the Szakálhát culture, many strands bound the early Linear Pottery and, with its mediation, the Lengyel culture to the legacy of the Körös culture in eastern Hungary and the Starčevo culture in Transdanubia, both representing the first Neolithic wave from the Balkans and South-East Europe. These strands can very often best be traced in religious beliefs and cult life, the most conservative elements of any culture. It is therefore hardly surprising that anthropomorphic vessels and the application of human hands onto the vessel body were more frequent in the primary, Early Neolithic culture province.

In his comments on a study discussing ritual depictions in the Greek Neolithic, Makkay assembled a list of the then known Early Neolithic anthropomorphic vessels,[53] quoting vessels of this type from Lepenski Vir IIIa, Azmaška Mogila, Anzabegovo I, Velika Žešma Vrtište, Čavdar, Gladnice, Akhilleion, Sesklo and Nessonnis.[54] This list can now be expanded with the vessel from Pernik, dating to the Karanovo I period,[55] and the finds from Banjata (Kapitan Dimitrijevo), Anza II, Zelenikovo and Donja Branjevina.[56]

The number of vessels with human hand depictions would obviously increase significantly if the vessels on which the face and other body parts are also indicated beside the hands (such as the gynaecomorphous vessels) were also assigned to this category. However, it is virtually impossible

[47] *Kalicz* (1970) 31, Fig. 22; *Kalicz–Makkay* (1977) Fig. 27/1–3.

[48] *Neugebauer-Maresch* (1995) Fig. 17/7–8.

[49] Several vessels of this type are known: *Csallány* (1966) Fig. 1/a-b, Fig. 2/a-b; *Kalicz–Makkay* (1977) Fig. 189; *Hegedűs* (1982–83) Fig. 2.

[50] *Kalicz–Makkay* (1977) Fig. 156/6 and Fig. 189/10.

[51] *Lichardus–Šiška* (1970) Fig. 1; *Pavúk* (1981) Fig. 24.

[52] *Kalicz–Kalicz-Schreiber* (1983–84) Fig. 3/10; *Kalicz* (1985) Fig. 74/1, *idem* (1998) Fig. 58. Here two reconstructed knobs would indicate the female character of the vessel.

[53] *Makkay* (1974) notes 132–142.

[54] For references, cp. *Makkay* (1974).

[55] "Jungsteinzeit in Bulgarien", Cat. no. 67.

[56] *Detev* (1950) Pl. II. 1; *Gimbutas* (1976) Pl. 26; *Garašanin–Spasovska* (1976) 90, Fig. 7; *Karmanski* (1979) Pl. 67/1, with the reconstruction.

to establish whether these features had originally been depicted in the case of fragmentary pieces – one can, at the most, assume that they were indicated on the strength of analogous finds. There are a number of intact vessels whose anthropomorphic nature is indicated by the hands depicted in relief on the vessel body or by hand shaped lugs (such as the specimens from Mohelnice, Dodeşti and Suceveni, as well as the Lengyel vessels quoted above). Judging from the surviving fragments coming from near the vessel rim and the analogous pieces, it seems quite certain that the biconical vessel from Pityerdomb did not end in a human head and neither was there an incised face on the vessel. The vessel's anthropomorphic nature is indicated solely by the hand shaped lug.

Vessels with human hands can be regarded as anthropomorphic pots for the following reasons. In his above-quoted article J. Makkay distinguished two basic types, the first being genuine gynaecomorphous vessels, such as the ones of the Körös–Starčevo culture and five fragmentary pieces from Nea Nikomedeia,[57] the other being the face pot whose proportions did not correspond to those of the human (female) body. He assigned the vessels with hand depictions to the latter category, calling them simplified anthropomorphic depictions. In my opinion, however, we should be able to justify why a vessel whose form does not correspond to the proportions of the human body is nonetheless interpreted as an anthropomorphic vessel, as in the case of the one from Pityerdomb.

Two types of figural lugs and handles can be distinguished. One appeared already in the Middle Neolithic, but became truly widespread later, in the Lengyel culture: the so-called vessels with protomes, mostly in the form of animal heads.[58] These were not zoomorphic vessels, but vessels with some special function decorated in an individual manner. Similarly, vessels with a lug or protome modelled on the human head should not be called anthropomorphic vessels since their form does not correspond to the human body and they only bear a figural decoration.

The situation is slightly different in the case of vessels with human arms or hands in relief on the sides or provided with hand shaped lugs or handles. In these cases, the human arm is shown in its anatomically correct position, suggesting that the other parts of the vessel too corresponded to a specific part of the human body. The vessel's neck, its shoulder and its belly can be correlated with a similar body part, reflected also in their designation. The correspondence between anthropomorphic vessels and the human body can be confirmed by countless archaeological and ethnographic examples.[59]

It has been convincingly shown that, aside from a few negligible exceptions, the vast majority of these vessels symbolize the female body. The reason for this is most likely the same as the emphatically feminine nature of the vast majority of contemporaneous solid clay statuettes. The virtually identical symbolic meaning of the two depiction types is indicated by assemblages such as the one from Včelince (Méhi) in Slovakia, made up of gynaecomorphous urns and a typologically identical idol set beside the urns.[60] The question of why Neolithic and Copper Age idols and anthropomorphic vessels depict females has been explored and discussed in countless studies; even a brief overview of this issue is beyond the scope of this study. The fact that some important substance, such as sacrificial remains, seeds, herbs, spices or paint was stored in these vessels[61] can perhaps take us closer to the possible interpretation of the meaning of these gynaecomorphous vessels. The dark cavern in the belly of these vessels contained something of importance for the house, for the community, just as the dark hollow of the female body contained the fetus, the seed of a new life.

[57] *Makkay* (1974) 150 and notes 131–134.

[58] One of the earliest depictions of this type is known from the Körös culture: *Kutzián* (1944) Pl. 17/4a-b. For two examples from the Lengyel culture, cp. *Kalicz* (1985) Fig. 76/9, 12.

[59] Cp. *Bánffy* (1990–91) 204, for further examples.

[60] *Kovács* (1985).

[61] The "Venus of Gorzsa" contained the burnt remains of a child's skull. *Gazdapusztai* (1957) 6.

This example of correspondence and association based on similarity is perhaps one of the most essential "parallels" in prehistoric rituals: the idea of containment is an elementary character according to the psychologizing branch of the research of archaic religions.[62]

Human hand representations can thus be regarded as simplified, but nonetheless full anthropomorphic – *pars pro toto* (synekdokhe) – representations. This is important from two respects. First, it indicates the presence of human representations in the early Linear Pottery, a culture rather poor in anthropomorphic objects. Second, in a broader context, it also reveals something about the symbolic thought of Neolithic communities. The whole from one of its parts: the anthropomorphic vessel from a pot with human hands – or, to put it otherwise, the woman (goddess?) is only visible to a beholder capable of perceiving other facets of the world than the natural and everyday reality. The few known details of Neolithic rituals too bear witness to this symbolic mindset.[63] The vessel with hand shaped lug illuminates yet another aspect of Early Neolithic cultic thought and it also illustrates the stubborn survival of these traditions into the Middle Neolithic.

Animal figurine[64] *(Fig. 146)*

As has been mentioned in Chapter 4 describing the settlement features and their finds, Feature 11 was – together with Feature 16 – one of the long pits flanking the western side of house of House I. The lowermost part of the pit, about 50–70 cm deep, was filled up almost immediately after the house was built. The rich assemblage recovered from Feature 11 lay on this level. The small animal figurine is one of the most intriguing finds of the assemblage. The position and the associated finds suggest that this animal figurine was part of a cult assemblage.

The figurine was found standing on its feet with its head facing north, corresponding to the orientation of the pit *(Fig. 27)*. A large, burnt clay plaque, probably the base of a large storage bin, was found nearby, together with a fragment that perhaps came from the side of this bin. Another thick clay plaque was interpreted as a baking platter, rather than a vessel fragment. In addition to several chipped stone implements, the burnt debris also contained a long river pebble whose tip pointed northwards, similarly to the head of the animal statuette. The wear traces suggested that it had been used as a whetstone. Another flat oval pebble, also showing traces of wear, lay beside it. The fragments of the vessel decorated with spiral meanders and containing paint can similarly be interpreted as part of this assemblage, as can the vessel with hand shaped lug described above, for these finds too lay near the whetstone and the animal figurine.

The animal figurine is 12.2 cm long, the width of the back is 4.45 cm (11/56, *Figs 41–42, 146*). Its head is 6.40 cm high, the height of the back is slightly smaller, 5.35 cm. The figurine is almost intact, only the tips of the horn have broken off and a small part, no more than 1–1.5 cm long, is missing from its legs, but this does not significantly change the figurine's proportions. It is regrettable that the horns are incomplete for this makes the determination of the animal species more difficult.

The figurine was modelled from the red clay used for pottery making at Pityerdomb and it was tempered with chaff and sand. The small breakage surface also reveals the firing technique: firing in a reducing atmosphere was followed by fring in an oxidizing atmosphere for a short time. The figurine was not fired completely: its exterior is dark red, the interior is blackish-grey. The surface is slightly worn, but even so, remains of the dark red, polished slip can be made out on the head, the

[62] Cp. *Neumann* (1956), for a detailed discussion of this view.

[63] *Bánffy* (1986a); *idem* (1990–91); *idem* (1997), with further new literature.

[64] Cp. *Bánffy* (2002b).

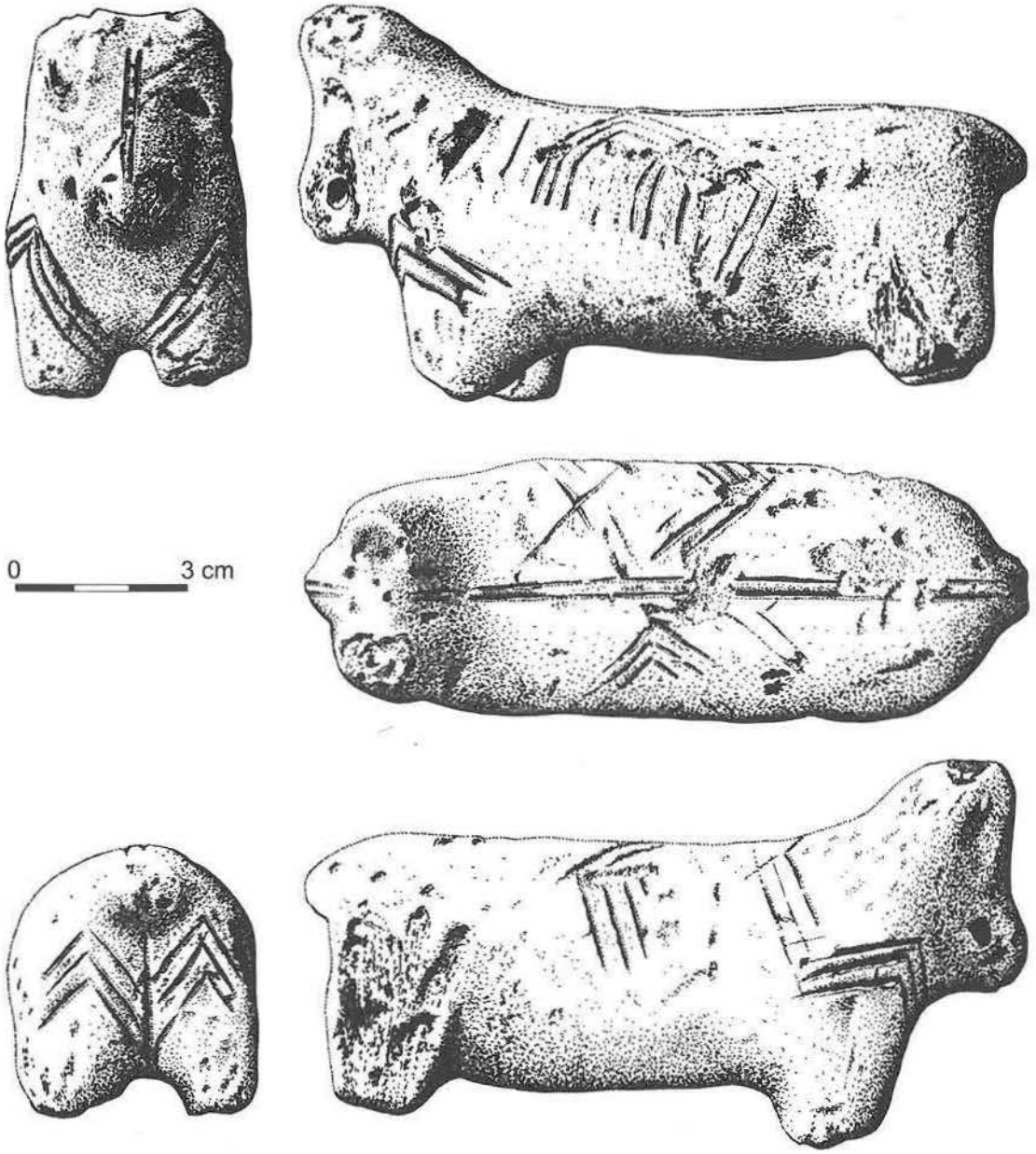


Fig. 146. Animal figurine

breast and under the tail. It seems likely that the entire surface of the figurine had originally been covered with the dark red slip and then polished to a bright lustre. The worn surface and the smaller breakages on the figurine's protruding parts are all indications of its one-time use.

The animal body is rounded and robust, even considering the missing ends of the legs. A tiny part had perhaps broken off from the narrow tail, although it is equally possible that the potter making the figurine simply wanted to indicate that the tail ended in a tuft of hair. The form of the head is noteworthy. The nose protrudes from the triangular face and a barely visible straight line marks the mouth. The eyes are indicated with triangular incisions, the eye sockets with finger impressions. The tiny incisions around the triangles perhaps symbolize the eyelashes.

The most conspicuous feature of the animal head is that the nose is pierced. After consulting with conservator Ágnes Zamadits, we decided not to clean the perforation for fear that the nose

would break off, but we threaded a thin needle through it and found that the piercing was complete. If the potter had simply wanted to indicate the nostrils, finger impressions or small incisions would have sufficed and there would have been no need to completely perforate the nose. This would suggest that the animal was not a wild species, but one "led by its nose", in other words, a domesticate. For the time being nothing more can be concluded from the fact that the animal's nose was pierced, especially as regards a period for which there is no conclusive evidence that draught animals had been used. Aside from the Pityerdomb figurine, I only know of one other Early Neolithic animal figurine with a visibly pierced nose: a coffee bean-eyed animal head from Magoula Mezil near Larissa, the fragment of a larger, hollow-bodied, bovid-like animal.[65] It seems likely that cattle were used as draught animals in the later, developed phase of the Neolithic.[66] It is possible that in addition to other archaeological evidence, these animal figurines with pierced nose will also confirm the use of cattle as draught animals already in the Early Neolithic.

The lightly incised lines covering the figurine's body are especially noteworthy. The variations of the incised motifs can perhaps be better seen on the drawing *(Fig. 146)* than on the photo *(Fig. 42):* one part of the belly is decorated with an angular pattern resembling a meander, while the other side has bundles of three zig-zag lines, one in the middle of the belly, the other near the neck. An animal figurine with a similarly asymmetric decoration was found at the Körös settlement of Szajol–Felsőföld: two different patterns ornamented the sides of a hollow animal figurine.[67] Two recently investigated early Alföld Linear Pottery (Szatmár II) sites yielded animal figurines with a human head decorated with asymmetric patterns.[68] Two lightly incised lines run along the spine of the Pityerdomb figurine, from the tail to the neck and along the head to the nose, the latter slightly deeper. Three emphatic lines enclosing a triangle can be seen on the rump and the front legs. On the rear, this triangular motif is divided by a deeply incised vertical line, perhaps marking the division of the two feet. It is possible that these lines were more emphatic, similarly to the pattern on the breast and the rump, but they survived to a lesser extent on the worn surface; this is also supported by the fact that the original red polished surface has survived to a greater extent in the spots where the ornamental motifs are deeper.

The two most obvious questions in the case of animal figurines is the determination of the species and the gender of the animal. I was unable to establish the species with certainty and my archaeozoologist colleague too found the species identification rather difficult.[69] The figurine obviously depicts a larger mammal. L. Bartosiewicz first excluded certain species, for example goat, owing to the shape of the tail. For the same reason the animal could hardly be sheep, and neither could it have been pig or dog owing to the horns. All deer species could be rejected since the figurine had horns and not antlers. After eliminating all other possibilities, we determined the species as cattle since none of the anatomical features contradicted this definition.

The determination of the animal's gender was similarly problematic. Although not immediately visible, a closer examination of the figurine allowed a few tentative conclusions. Even though the horns have not survived along their entire length and even in view of the fact that cows also have horns, it seems probable that a cattle depiction of this type is less likely to represent a cow.

[65] *Papathanassopoulos* (1996) Cat. no. 257; *Toufexis* (1994); *idem* (1996).

[66] *Bökönyi* (1988) 18, 47.

[67] *Raczky* (1979–80) Fig. 8/1.

[68] Mezőkövesd–Szentistván-Mocsolyás: *Kalicz–Koós* (1997b) Fig. 5/6–7. Although only one side of the animal figurines from Füzesabony–Gubakút can be seen on the published photos, some were covered with a similar incised pattern. *Domboróczki* (1997); *idem* (2001b); Fig. 9, and L. Domboróczki's kind personal communication.

[69] I would here like to thank Prof. L. Bartosiewicz for his kind help.

The underside of the figurine did not appear to be helpful either. At first glance, there was no depiction of any organs indicating the gender of the animal, even though these were often emphatically depicted and sometimes downright exaggerated on Neolithic statuettes. A closer look at the animal's underbelly and its examination by running a finger over the surface, however, revealed two slight finger impressions and a slight protuberance between the two hind feet. This can perhaps be interpreted as an indication of maleness, although it must again be emphasized that this type of reduced depiction is extremely rare among the Neolithic and Copper Age animal representations of the Carpathian Basin. Unless the figure maker's intention was not to indicate the animal's species and its gender – a rare, but documented practice – this is most unusual since of the features indicating species and gender, the latter is typically exaggerated.[70]

In the light of the above, it seems likely that the figurine depicts a bull, even though the features indicating gender are practically negligible. It is therefore also possible that the animal figurine represents an ox.

This possibility raises more questions than it solves. The fact that this carefully deposited animal figurine was modelled on cattle is hardly surprising. We know from S. Bökönyi's comprehensive monograph that in contrast to sheep and goat, the domestic form of aurochs first appeared not in South-West Asia, but in the Balkans.[71] Bökönyi dated the earliest domestic cattle bones to the "Pre-Pottery Neolithic of Thessaly"[72] and he noted that cattle breeding played an important role in the subsistence of the Körös culture. The importance of cattle in agriculture has been discussed in detail by H. Behrens, according to whom the beginnings of intensive agriculture can be linked to the appearance of animal-drawn ploughs.[73] Although he argued that oxen first appeared in the Bronze Age, he nonetheless suggested that castration was known and practiced in the Early Neolithic.[74] In his monograph on Neolithic economies, J. Lüning too posited that cattle were castrated in order to increase their draught power and that they were secondarily exploitated already during the Early Neolithic in Central Europe.[75] In his discussion of Early Neolithic cattle depictions, S. Stanković noted that most of the realistically modelled figurines depicted bulls or oxen, adding that the depiction of these two animals differed little from each other. He agreed with Lüning that both were symbols of power and fertility.[76]

Few good analogies to the Pityerdomb figurine can be quoted from the Early Neolithic assemblages of South-East Europe – this is all the more remarkable in view of the exceptionally rich corpus of clay figurines. Most zoomorphic depictions occur in the form of protomes applied to altars: three or four animal heads on the corners, with the altar itself functioning as the body.[77] One unusual find is a deer shaped altar from the Karanovo I period with a single head, a rather realistic piece of sculpture.[78] A bull figurine from the same period was found on the outskirts of Sofia.[79] Altars with naturalistically modelled or, conversely, stylized feet were also quite frequent in the

[70] *Bánffy* (1996c); *idem* (1998).

[71] *Bökönyi* (1974) 109–110.

[72] *Bökönyi* (1974) 109. He probably meant Argissa Magula and perhaps the contemporary layer of Sesklo. For controversy over the possible existence of a pre-pottery Neolithic in Thessaly, cp. Chapter 3.

[73] *Behrens* (1964).

[74] *Bökönyi* (1974) 119; *idem* (1988) 18, 47. Based on the changes on the humerus and femur, Bökönyi assumed that cattle had been used as draught animals; this would be indirect evidence for their castration. There is a general consensus that the exploitation of oxen as draught animals became more widespread at the close of the Middle Neolithic in the Carpathian Basin, i.e. in the developed phase of the Linear Pottery culture. H.-H. Müller argued that cattle had been castrated already in the Early Neolithic. *Müller* (1964).

[75] *Lüning* (2000) 11–12.

[76] *Stanković* (1989–90) 41.

[77] *Minichreiter* (1996–1997); *idem* (1997a); *Nițu* (1972) 28, 56.

[78] *Detev* (1968) Fig. 25.

[79] Sofia–Slatina: *Nikolov* (1989a) 31–32.

Early Neolithic.[80] One of the best known finds is an altar with a head at each corner from the Starčevo settlement at Lánycsók, although it is uncertain whether these were human or animal heads.[81]

A number of realistically modelled animal figurines are known from the Early Neolithic. These include the hedgehog from the Akhilleion Ib/IIa phase.[82] Neither were domestic animals uncommon among the figurines of this period: the Early Neolithic finds from Sesklo and Khalkiades II (Magula Mezil) near Larisa include two rather life-like bull heads, one with a depiction of the tongue in the open mouth.[83] A few rather crudely modelled Early Neolithic animal statuettes have been recently published from Karanovo. Two of these can be interpreted as a sheep and a goat in view of the form and posture of their tail, while in the case of the others, the species of the cylindrical bodied animals could not be determined.[84] Most of the Bulgarian animal figurines depict bovids, usually a bull or an ox, such as the ones from Elešnitsa, Kirdzali, Ussoe and Sofia–Slatina.[85] Recognizable bull depictions, both in the form of solid statuettes and animal shaped vessels, have been brought to light at Tell Rakitovo.[86] Zoomorphic depictions and animal heads are also known from the Albanian Early Neolithic, from the Dunavec and Kolsh II sites.[87] The eyes on the animal head from Anza II were indicated in the same way as on the Pityerdomb statuette: two finger impressions with incised lines.

Four animal figurines were brought to light at Donja Branjevina, a site lying farther to the north in the Bačka.[88] Three were covered with finely incised lines, while the fourth had a pierced, pointed nose. The species of two figurines could be determined: one was sheep, the other cattle. A few animal figurines carved from marble and other rocks were found at Gura Baciului (Bácsi Torok), a site of the Transylvanian variant of the Körös culture.[89] N. Vlassa considered all of the figurines to depict bovids, specifically cattle.[90] An animal head from Macedonia, assigned to the Starčevo culture,[91] has a pierced nose, similarly to the figurine from Pityerdomb. S. Stanković published a few bull pendants, realistic bull depictions and clay horns interpreted as *pars pro toto* representations from the Djerdap II site in the Danube Gorges.[92] The striking similarities between the Early Neolithic zoomorphic depictions in the Starčevo heartland and the animal figurines of the Vinča culture have been amply documented.[93] Most animal figures continued to appear in the form of heads applied to altars or in the form of animal shaped altars. E. Comşa published the animal figurines of the Dudeşti culture,[94] roughly contemporary with the Pityerdomb site, and a bull depiction is known from the Transylvanian Vinča–Tordos culture.[95] M. D. Lăzar and Z. Kalmár-Maxim have both noted that the overwhelming majority of Vinča animal depictions were modelled on cattle or, to be more precise, on bulls, such as the ones from Valea Nandrului (Nándorválya), Balta Sărăta and Tordos.[96] Two more or less realistically modelled animal figurines, one of them a bull from the Parţa (Parác) site, can be quoted from the Middle Neolithic of Romanian Banat.[97]

[80] *Kutzián* (1944) Fig. 35/1–6, Fig. 36/9–10; *Marangou* (1992); *idem* (1997).

[81] *Kalicz* (1990) Fig. 11. for further examples, cp. *Kalicz* (1990) 79–80; *Bánffy* (1997) 38–40; *idem* (2002c).

[82] *Gimbutas* (1989b) Fig. 7/56.1.

[83] *Toufexis* (1996) 159; *Papathanassopoulos* (1996) Cat. no. 257.

[84] *Hiptmair* (1997) 256–260.

[85] *Todorova–Vajsov* (1993) Figs 196–199; *Nikolov* (1989a) 31–32.

[86] *Matsanova* (1996) Figs 7–8.

[87] *Korkuti* (1996) 42, Fig. 62.

[88] *Trbuhović–Karmanski* (1993) Fig. IV/1a–b, 9a-c, Fig. V/6a-c and the reconstruction on Fig. XIV/1a-b.

[89] *Vlassa* (1966) 17, Fig. 14; *Lazarovici–Maxim* (1995) Fig. 23.

[90] *Vlassa* (1966) 17.

[91] *Gimbutas* (1976) 214, Fig. 153.

[92] *Stanković* (1989–90) Fig. II. 20–22.

[93] *Tasić* (1973); *Stanković* (1986).

[94] *Comşa* (1971) 237.

[95] *Lăzar* (1974–75) 12, Figs 1–2.

[96] *Lăzar* (1974–75) 16–18; *Kalmár-Maxim* (1991) 125, Fig. 36/4, 149, Cat. no. 21, and 210, Cat. no. 153.

[97] *Lazarovici* (1972) 16, Figs 9–11, Fig. 12. Cp. also *Lazarovici–Draşovean–Maxim* (2001) 276–280.

The archaeological legacy of the Vinča communities of Serbia includes countless realistic animal depictions, even if the majority of the zoomorphic figurines are fantastic creatures that often invite all manners of fanciful and absurd interpretations.[98] E. Tomić quotes a number of figurines that are "simply cattle, sheep and dogs".[99] The body proportions, head form and pierced nose of one of these figurines, found at Vitkovacko Polje near Aleksandrovac, recalls the animal statuette from Pityerdomb. A fragment from Slavonski Brod–Galovo, dated to the early Starčevo period, depicts a duck head; it was found together with three burials and other cult finds, such as clay bull horns and an altar with a small bowl.[100]

The Vinča statuary, including also the animal figurines, had an impact not only on the Carpathian Basin, but also on the figural art of regions lying to the east[101] and, as shall be shown below, to the north and northwest. Let us briefly return to the finds from Tordos. In his description of Zsófia Torma's collection, M. Roska mentions three animal figurines: "Four-legged animal idols of clay, with pierced nose, outlining the eyes."[102] It is possible that the eyes had originally been marked by incised lines that had worn off with time.

In addition to the pieces mentioned above, a number of other animal statuettes, described as centaurs by M. Roska, are also known from the Tordos site.[103] The best analogies to these statuettes with a human face and an animal body come from an early Linear Pottery site in the Upper Tisza region.[104] This imagery, widespread in the late (Pločnik) phase of the Vinča culture, first appeared in the early Vinča phase and probably influenced the statuary of the early Linear Pottery. Beside these centaur figures, the statuettes recovered from early Alföld Linear Pottery (Szatmár II) sites, such as Füzesabony–Gubakút and Mezőkövesd–Szentistván-Mocsolyás, included a number of naturalistically portrayed animal figures.[105] The proportions and the finely incised lines decorating the body are perhaps the closest contemporary parallels of the Pityerdomb statuette.

The above described traditions in animal representations reached Central Europe with the northern-northwestern expansion of the Linear Pottery groups. According to a doctoral dissertation on the figurines of the early Linear Pottery culture, an animal head found at Boškovštejn in Moravia perhaps had a pierced nose.[106] D. Kaufmann devoted a separate study to the southern (Vinča) cultural influences on the cult objects of the early Linear Pottery communities settling between the Elba and the Saale.[107] He noted that the cultural influences from the south were the strongest in areas where a direct contact between the two worlds could be demonstrated, as for example at Erfurt–Steiger, Zauschwitz and Barleben.[108] However, the chronological position of the animal figurines discussed by Kaufmann was disputed by other prehistorians specializing in the study of the Linear Pottery culture and its ritual assemblages. H. Quitta argued that most of the animal figurines should rather be assigned to the early Linear Pottery phase, while O. Höckmann was inclined to accept a slightly later date also.[109] They all agreed on one point, namely that the clay figurines were born under direct Körös and/or Starčevo influences.[110]

In a recent study on the animal figurines of the Linear Pottery culture, D. Kaufmann devoted a special section to cattle depictions.[111] In addition to the specimens mentioned above, he quoted

[98] *Gimbutas* (1982); *idem* (1989a).
[99] *Tomić* (1988) 106.
[100] *Minichreiter* (1996–97) 19–20, Figs 1–2.
[101] *Tomić* (1988) 106.
[102] *Roska* (1941) 330, Fig. 143/1–3.
[103] *Roska* (1941) Fig. 104/14.
[104] *Domboróczki* (1997); *idem* (2001b); *Kalicz–Koós* (1997a) Catalogue: 330: 163. 38–40, no. 20; *eadem* (1997b) 134, Fig. 5.
[105] *Kalicz–Koós* (1997a) 165, Cat. no. 21 and esp. 19; *eadem* (1997b) 137, Figs 6–7.
[106] *Berka* (1926) Fig. 18/4.
[107] *Kaufmann* (1991).
[108] *Kaufmann* (1976) 62–63.
[109] *Quitta* (1960) 71; *Höckmann* (1965) 8–11.
[110] *Kaufmann* (1976) 87.
[111] *Kaufmann* (1999) 335.

hollow and solid fragments from Stadlaningen and Mötzing–Haimbuch. He interpreted the animal head decorated with short stabs arranged into lines found at Eilsleben as a bovid, even though the horns have broken off. He assigned this fragment, covered with a reddish-yellow slip polished to a fine lustre – similar to the one on the Pityerdomb figurine – to the early Linear Pottery horizon.[112]

This brief overview reveals that figurines resembling the one from Pityerdomb were fairly rare in the Early and Middle Neolithic of Central and South-East Europe. Even so, several typological traits can be distinguished that allow a comparison with the zoomorphic figurines dating to roughly the same chronological horizon in other regions. The most important of these is the species of the depicted animal: cattle, perhaps a bull or, even more likely, an ox. The above quoted examples indicate that the body proportions of the figurine, the asymmetric linear motifs covering the body and the pierced nose were all known during this period. Meander and zig-zag patterns occur on several Neolithic statuettes, both anthropomorphic and zoomorphic. The pierced nose suggests that the animal was a domesticate, most likely a draught animal – an ox.

Even more important is the fact that this mode of depiction reflects the survival of Körös–Starčevo traditions in the figural art of both the Linear Pottery and the Vinča culture. In view of the overall nature of the pottery from the Pityerdomb settlement this is hardly surprising since the analysis of the ceramic assemblage indicated the dominance of Starčevo traits. Even though the Pityerdomb figurine does not have exact analogies, its stylistic traits can be fitted into Balkanic and South-East European Neolithic figural art. Its fine decoration and careful modelling belies D. Bailey's assumption that the poor quality of zoomorphic figurines indicates that animals did not play a prominent role in the daily life of Early Neolithic communities and that they had no part whatsoever in rituals.[113]

The many traces of wear on the figurine's body are rather striking. The drawing clearly shows that the surface is marred by smaller injuries and irregular, small scars resembling the linear ornament. It has already been mentioned that the front and hind part, as well as the area around the nose is covered with more emphatic, more deeply incised lines and that the polished, red slip has survived to a better extent in these spots. That the other parts of the animal body were more exposed to wear is obvious: to judge this, it is enough to hold the figurine in one's hand. If one wants to break off the protruding parts, such as the legs or the horns, of a roughly cylindrical clay figurine, these usually break at the base. The fact that only the tips of the legs and the horns are missing is not an indication of breakage, but rather of wear during the figurine's use. It is all the more important to discuss these details, since they can be interpreted within the scope of an exciting new field of research, best described as fragmentation studies, focusing on breakage patterns and on the possible intentional breaking of prehistoric artefacts and, especially, of objects interpreted as cult finds, by experimenting with vessels and idols made specifically for this purpose.[114] It seems probable that the animal figurine from Pityerdomb was not broken intentionally after its usage.

How was this statuette 'used'? The careful, delicate modelling of the statuette and the mode of its deposition would suggest that it was not an artefact used in daily life or a clay figurine functioning as a toy. Moreover, the archaeological find context of the figurine recovered from Feature 11 was not the usual domestic one. It has already been mentioned that the figurine was found together with other articles whose arrangement indicated that it was part of a cult assemblage *(Fig. 31)*.

The following observations support the above interpretation. The animal figurine was not simply thrown into the pit as most of the other similar finds (although this, too, would be

[112] *Kaufmann* (1999) 333.

[113] *Bailey* (2000) 105–106.

[114] *Chapman* (2000); *idem* (2001a) *idem* (2001b). Cp. also the volume *Fragmentation in Archaeology*, edited by E. Bánffy and J. Chapman (in print), as well as D. Gheorghiu and J. Chapman's excavations in the Lower Danube region and their research project on the fragmentation of Gumelnița vessels and idols.

meaningful, had this been the case), but was carefully set on its feet with the head facing north, the direction in which the houses of the settlement were oriented. This no doubt had some significance, similarly to the objects placed around it.

The pit itself can hardly be interpreted as a cult feature. Its form, its size, its orientation and its fill did not differ from the other long pits flanking Houses I and II. A secondarily buried assemblage of carefully deposited objects in an ordinary pit suggests that this was an article originally used in cult life that had been buried and desacralized.

The figurine – and the other objects of the assemblage – had fulfilled their role. The high number of cult finds recovered from Neolithic settlements indicates that in these cases the occupants had discarded these articles and made new ones for the next occasion.[115] It has been frequently observed on the Neolithic settlements of Central and South-East Europe that once a cult assemblage had fulfilled its function and was no longer needed, it was simply thrown into a refuse pit and sometimes even broken into pieces in order to deprive it of any remaining power.[116] This practice was part of the act of desacralization.

A similar interpretation can be assumed for the cult assemblage found in Feature 11 of the Pityerdomb settlement, although there are a few differences compared to other discarded cult finds. The animal figurine had obviously been used for a certain period of time, in other words, it was used in a specific series of acts that were presumably not part of day to day activities. The traces of wear would imply that that this period was not a short one, for example a single ritual.[117] The animal figurine had perhaps served its purpose when the construction of the house was completed or after a certain period in the life of the house's occupants had elapsed. In this case, however, the occupants did not divest the figurine of its remaining power by destroying and smashing it to pieces and throwing it away. Although the figurine was buried in a pit, the careful deposition by setting it on its feet and turning its head to the north, as well as the arrangement of the associated objects would suggest that the occupants of the house who discarded this cult object had retained an emotional attachment to the figurine. Even though this is mere speculation, it would appear that they took care to prepare the spot where the figurine was buried, for example by placing the long whetstone near it, perhaps to protect the statuette.

The archaeological context excludes two other possible interpretations. The position of the figurine on the occupation surface of the long pit excludes an interpretation as a foundation deposit. Sacrifices of this type always preceded the construction of the house and they were usually deposited when the house foundation was dug, either in the undisturbed soil, in a foundation trench, in a posthole or under the floor. It is obvious that the house at Pityerdomb had already been built when the animal figurine and the objects found beside it had been deposited under the then occupation surface of the pit. It would appear that the statuette had been made and used by the house's occupants, probably a nuclear family, and that it had been part of the cult inventory of House I – in other words, it was one of the objects set in the cult corner and used periodically.[118]

In the light of the above, it also seems unlikely that the figurine was a substitute for a genuine animal sacrifice, with the animal figurine used instead of a slaughtered bull or an ox.[119]

[115] Cp. *Bánffy* (1990–91) Chapters 3.3. and 5.

[116] *Höckmann* (1965) 1–2.

[117] *Eliade* (1976) 345–346.

[118] Cp. *Bánffy* (1994); *idem* (1997) Chapter 7, for the archaeological evidence the creation and use of cult corners.

[119] An overview of the many books and articles on this subject would exceed the scope of the present volume. For a comprehensive discussion and the interpretation of Neolithic assemblages from the Carpathian Basin, cp. *Nilsson* (1950); *Eliade* (1978) Chapter 3; *Mellaart* (1975). Chapter 3, esp. 108–111; *Kaufmann* (1995); *Kalicz–Raczky* (1981); *Zalai-Gaál* (1998); *Makkay* (1973); *idem* (1975b); *idem* (1983); *idem* (1986).

The clay animal figurine from Pityerdomb is a unique find. Some typological traits bind it to the Early Neolithic cultures of the Balkans and South-East Europe; the same traits can also be found in the early Linear Pottery assemblages of Central Europe. In this sense, the figurine can be regarded as a symbol of the intermediary role played by the occupants of the Pityerdomb and related settlements in the diffusion of South-East and Central European civilization.

Altar fragment

The finds from Pityerdomb included two fragments that may have come from altars. One of these comes from the corner of a poorly fired, light red, rectangular object made from poorly levigated clay tempered with chaff and sand (16/13, *Fig. 68*). There is a round depression at the corner of the lower part, perhaps the juncture of the foot. Although this is mere speculation owing to the strongly worn condition of the object, it seems likely that it was part of a rectangular object resting on feet with a concave interior. The dimensions do not exclude this reconstruction: the 7 cm long and 3.2 cm thick fragment could have been part of a rectangular, table-like object that fits in nicely among the altars of the South-East European Neolithic and early Linear Pottery culture.

The other fragment that can be interpreted as an altar fragment represents another type and is a more problematic piece. The fragment recovered from Feature 30 comes from a well-fired, reddish and greyish-brown clay object of unknown form and function made from poorly levigated clay tempered with chaff and sand (30/25, *Fig. 132*). Its side is curved and it has a hole with a diameter of 5–6 cm in its centre, allowing the reconstruction of a curved, convex clay object with a diameter of roughly 25 cm that had a cylindrical hole in its centre. It is exactly the presence of this hole or perforation that does not allow an interpretation as a vessel or a lid. One characteristic feature of the rectangular and triangular altars modelled on realistic or mythical creatures is the round depression or hole on their top. A detailed analysis on the function of this hole has been recently published.[120]

Although rare objects at the time, the manufacture of clay altars began in the earliest phase of the Neolithic. The first altars in Thessaly date to the Proto- and Preseklo phase.[121] Triangular and rectangular altars were both used in the Bulgarian Neolithic; examples for the former can be quoted from Karanovo, Muldava and Gradešnica,[122] and from Pernik and Gălăbnik for the latter,[123] while both types were found at Rakitovo and Sofia–Slatina.[124] All had a round, cylindrical depression in the middle. On some pieces this depression widened, making the upper part of the altar slightly hollow and rimmed. Countless similar objects were brought to light in the heartland of the Starčevo distribution. Similarly to the altars from the Hungarian and Transylvanian distribution of the Körös culture, the upper hollow part was replaced with a small bowl fitted to the top of the rectangular altar in the case of the specimens found at Donja Branjevina.[125] The hollow variant and the type provided with a small bowl were both found at Foeni (Fény) in Romania.[126] A similar altar was recovered from Starčevo itself and from the Starčevo layer of the Lepenski Vir site.[127] The four corners of the altar from Mostonga were perforated.[128] The variant with the bowl instead of the depression in the middle also occurs among the nine altar fragments

[120] *Bánffy* (1997) Chapters 4 and 5.

[121] *Theokharis* (1981) Figs 63–64.

[122] *Georgiev* (1961) Fig. 7. 1a-c; *Kănčev* (1973) Fig. 10; *Nikolov* (1974) Figs 4, 6, 9, 17; *Nikolov* (1984) Fig. 18, right.

[123] "Jungsteinzeit in Bulgarien", Cat. nos 68–69.

[124] *Nikolov* (2001) Figs 1–2; *Matsanova* (1996) Fig. 10. V. Nikolov has kindly informed me that he is currently assembling the corpus of Early Neolithic altars from South-East Europe.

[125] *Karmanski* (1968) Fig. 1/1, Fig. 15/2, Fig. 41/a, d, Fig. 7/1, 12, Fig. 8/1, Fig. 11/1; *Kutzián* (1944) Figs 1–2, 6, 16, 18, 34–36.

[126] *Ciobotaru* (1998) Fig. 2/1–11.

[127] *Dimitrijević* (1979) Pl. 17/8, Pl. 18/5–6.

[128] *Karmanski* (1968) Fig. 15/4.

found at Barutnica and the five pieces brought to light at Tečić near Kragujevac.[129] The triangular altar from Vinkovci–Gradska Zona was decorated with an incised linear pattern.[130]

For a long time Lánycsók was the single Transdanubian site of the Starčevo culture where altars and their fragments had been found. The well-known and oft-quoted altar with four animal heads at the corners, depicted on the cover page of N. Kalicz's monograph on the Starčevo culture, has a small round depression on its top. The two other fragments came from rectangular types standing on four feet and both had small protuberances at the corners. N. Kalicz describes one of these fragments as "rising slightly towards the middle and pierced with a small, round hole in the middle where it was the highest."[131] Other altar fragments were recovered from the Gellénháza–Városrét site whose finds share numerous similarities with the Pityerdomb assemblage.[132] The fragments came from altars with pierced corners standing on small feet and decorated with incised linear patterns; they can be assigned to the hollow variant. Judging from the angle of the fragments, one was triangular, the other rectangular.

The high number of Middle Neolithic altars indicates that their use was fairly widespread.[133] In contrast, clay altars were – similarly to idols – less prolific in the Linear Pottery culture. The few early Linear Pottery examples, to be quoted below, nonetheless indicate the sporadic survival of this tradition in Central Europe.

One of the finds resembling the Pityerdomb altar can be practically disregarded. Together with the other finds, the rectangular pedestalled altar decorated with an incised meander pattern from Bajaszentistván–Szlatina shows strong Vinča influences and thus it reflects Balkanic, rather than Central European traditions.[134] Another find, recovered from the marshland of the Little Balaton region, cannot be ignored, even though it represents another altar type, the variant with animal or human heads. The altar fragment from Kéthely was tempered with chaff and a cereal grain pressed into the clay marked the eye.[135] Another altar fragment, a leg pierced at the heel, is a stray find from Sármellék.[136]

Beside the animal shaped altar from Tiszacsege–Homokgödör,[137] several altars have been brought to light at two recently investigated Szatmár II sites that yielded a rich assortment of cult finds.[138] These altars can be assigned to different types – most come from the rectangular table-like variant standing on four legs, perhaps this being the reason that they were described as "the lower part of an altar" in the catalogue in which they were published. In contrast to Neolithic house models, I am unaware of any altars that have a separate upper part.[139] One of the fragments comes from a rimmed, hollow, rectangular specimen.[140]

It is noteworthy that the few currently known rectangular and animal headed altars can probably all be assigned to the early Linear Pottery horizon.[141] The rectangular altar found at Tomašica has been dated to roughly the same period, the late Starčevo phase or the very beginning of the Malo Korenovo phase.[142]

[129] *Korošec–Korošec* (1973) Fig. 13/1–5, 7, 10; *Galović* (1962) Fig. 2/6, Fig. 8/5–8.

[130] *Minichreiter* (1992a) Fig. 18/11.

[131] *Kalicz* (1988) 81.

[132] *H. Simon* (1994) Fig. 3/a–b, Fig. 4/a-b.

[133] It seems unnecessary to list or to describe them here. Cp. *Bánffy* (1990–91); *idem* (1997) 40–43.

[134] *Kalicz* (1994a) Fig. 3/9.

[135] *Sági–Törőcsik* (1989) Fig. 25/a-b.

[136] *Előry–Sági–Törőcsik* (1991) Fig. 10/a-b.

[137] *Kalicz–Makkay* (1977) Fig. 8/4a-b.

[138] L. Domboróczki investigated the Füzesabony–Gubakút site, N. Kalicz and J. Koós excavated the settlement at Mezőkövesd–Szentistván-Mocsolyás. *Raczky–Kovács–Anders* (1997) 163, Cat. no. 41, and 164, Cat. no. 51.

[139] *Bánffy* (1986b); *idem* (1990–91) 212–217.

[140] *Raczky–Kovács–Anders* (1997) 164, Cat. no. 50.

[141] Újezd–Zádlovice: *Tichý* (1962) Fig. 14/4; Bíňa: *Pavúk* (1980) Fig. 14/1; Eilsleben: *Kaufmann* (1976) *Kaufmann* (1991). I. Pavlů has published a handful of rectangular fragments from Bylany interpreted as "tables" and dated broadly to the Linear Pottery period. The serial number of the feature from which they were recovered suggests that these finds can be assigned to the early Linear Pottery horizon. *Pavlů* (2000) 315–316, Pl. 7.

[142] *Dimitrijević* (1969a) Fig. 19/7.

In spite of their fragmentary condition allowing few far-reaching conclusions, the two altar fragments from Pityerdomb can be regarded as cult objects reflecting Starčevo, rather than Linear Pottery traditions.

Discussion: The Balkanic and possible local roots of the early Transdanubian Linear Pottery

It has been demonstrated in the discussion of the ceramic inventory that the finds from Pityerdomb are bound by many strands to the late Starčevo assemblages, indicating strong ties between the two contemporary cultures. The animal figurine, the anthropomorphic vessel, the human foot and the altar fragments have good South-East European analogies, while the idol head and the altar fragments have both Balkanic and Central European parallels, even if only in the early Linear Pottery horizon. Similarly to pottery decoration, the early relics of art too reflect the strong cultural impact of the South-East European Early Neolithic.

The layout of the settlement, the location and the distance between the two houses reveals that there was no communal space at Pityerdomb. We did not observe any cult features, such as sacrificial pits, and owing to the fact that bones were not preserved in the soil, we did not find any burials either. The single clear indication of the intentional, conscious arrangement of cult finds comes from Feature 11, in which we found the animal figurine; another possible, but rather uncertain case for the intentional deposition of an object can perhaps be quoted from Feature 20, the human foot lying on the debris of the hearth in House II. These two examples would perhaps suffice, had the Pityerdomb settlement not been a site caught up in the process of the Neolithic transformation of Central Europe. Set against this wider background, it seems instructive to examine whether one or more specific features can be distinguished in the early Linear Pottery assemblages from Pityerdomb and other Transdanubian sites that can be regarded as the first indications of a change in the cult finds and the ritual practices of the Linear Pottery communities of Central Europe.

There were two distinct sets of lifeways, material cultures and, no doubt, religious beliefs and ritual practices in the mid-6th Millennium BC in Europe. The climate and the environment of South-East Europe and the southern part of the Carpathian Basin differed markedly from the other regions of the continent; the first studies in prehistoric religion, reconstructing a Magna Mater-like cult and the associated fertility rites from the rich archaeological legacy of the first agriculturalists, were published in the 19th century. For a long time, the studies discussing these cults began with the Neolithic. In contrast, the possible beliefs and ritual practices in the northern areas of the Carpathian Basin and Central Europe during the same period remained an uncharted territory. The spectacular art of the Upper Palaeolithic discovered in the caves of the Alps and the Pyrenees determined the main direction of the research of Palaeolithic art. Only a few isolated graves, occasionally with unusual grave goods, were known from the European Mesolithic, but these scattered finds were insufficient for drawing any far-reaching conclusions. However, the archaeological and palaeoenvironmental evidence indicates that there was no ethnic vacuum before the arrival of the Early Neolithic farmers. Our knowledge of the lifeways and subsistence of the Mesolithic hunter-gatherer communities has increased vastly during the past three decades. Accepting the tenet that the lifestyle of a given population is not independent of the nature of its beliefs, it seems worthwhile to examine this question even though there is little in the way of direct evidence from Central Europe and the Carpathian Basin.

No matter how poor the archaeological record, this issue most certainly needs to be explored in the case of the Carpathian Basin, a region marking the boundary between two markedly different

lifeways and religious beliefs. If there was any mixing and any interaction between the two worlds, it must have taken place in the Upper Tisza region and the area around Lake Balaton in the mid- and later 6th Millennium, in other words, during the late Starčevo and the initial Linear Pottery period – the period marked by the Vörs, Gellénháza, Pityerdomb and other contemporary settlements. That there was a certain degree of mixing between the two populations and the two cultures in reflected in the archaeological record (pottery, stone implements, economy). There must have been some kind of interaction as regards religious beliefs and cult practices too since the Central European cult finds changed radically during the centuries spanned by the Linear Pottery culture and this can hardly be explained otherwise than by the intrusion of the beliefs of the local population. It therefore seems instructive to briefly review research in this field and what we know about the religious beliefs of these two populations.

The religious beliefs of early farming communities

Countless studies and analyses have been devoted to the religious beliefs of the farmers colonizing South-East Europe and to the anthropomorphic and zoomorphic figurines, altars and house models on which these analyses were based. Many studies drew ideas and parallels from ethnography, psychology, the general history of religions, linguistics, philosophy and even from modern politics in their argumentation. The research of Neolithic cult finds has a history of its own that is, obviously, inseparable from the *Zeitgeist* of prehistoric research. B. G. Trigger has convincingly argued that every archaeological interpretation is influenced by the analyst's own social milieu and that this is especially true in the case of new disciplines working with little evidence.[143]

M. Gimbutas' controversial theory on early religion was based on Bachofen's studies on matriarchal societies and Frazer's monumental work citing thousands of ethnographic and ancient examples.[144] Gimbutas was a greatly respected archaeologist who, being of Lithuanian stock, had an encyclopaedic knowledge of the Russian and Ukrainian find assemblages and archaeological literature that was, for the most part, inaccessible to the western world. Her knowledge of the archaeological record was and remains admirable. Gimbutas' reconstruction of an eastern Mediterranean and South-East European pantheon populated chiefly by female goddesses is rather arbitrary to say the least. Her books paint an idyllic, almost utopian world of peace preceding the world dominion of men.[145] It is quite obvious that Gimbutas contrasted the religion of the "Goddess" and her cult, practiced mainly by women, with the influx of the patriarchal Indo-Europeans – whom she identified with the Kurgan people – who in the Early Bronze Age subjugated the peaceful farming communities of Europe (her other pet theory).[146] As a matter of fact, most prehistorians reject this theory. Her work can only be understood if these two theses are viewed together. Gimbutas herself made no secret of the emotional link between her two main fields of research, arguing that the real Fall was the destruction of Old Europe that shattered the idyllic harmony represented by peaceful Neolithic lifeways and that the entire course of history has since then been moulded by the aggressive rule of males and their violent wars.[147]

[143] *Trigger* (1995) 456.

[144] *Bachofen* (1978); *Frazer* (1965).

[145] *Gimbutas* (1982); *idem* (1989a); *idem* (1991).

[146] Cp. *Gimbutas* (1994), a summary of her views, published after her death.

[147] That this is by no means an exaggeration can be illustrated with a quote from her book: "The outcome of the clash of Old European with alien Indo-European religious forms is visible in the dethronement of Old European goddesses ... Old European goddesses appear in European folktales, beliefs ... This was the beginning of the dangerous convulsions of androcratic rule which ... reached the peak in Stalin's East Europe with the torture and murder of fifty million women, children and men." *Gimbutas* (1989a) 318–319.

The strong positivist critique of Gimbutas' 'Old Europe' theses has much in common with the arguments put forward by the advocates of the New Archaeology, according to which archaeology is not a special branch of historical studies, but rather a backward field of the natural sciences in which there is no room for imaginative interpretations. L. Binford argued that culture was nothing else, and certainly no more, than a response given to environmental challenges.[148] In contrast, B. Trigger believed that the intricate system of cultural symbols could hardly be described with processes taken from biology.[149] Offering a new interpretation of Gimbutas' ideas and, at the same time, sometimes challenging them, feminist gender archaeology was in essence one of the responses to the processualist critique, although often spiced with modern political undertones.[150] The reaction to the positivism of Gimbutas' critics led to the rise of post-processual 'reflexive' archaeology, as well as to countless new studies presenting and analyzing Neolithic finds and religious beliefs, enriching the already prolific works in this field. The most outstanding representatives of this approach regard the archaeological heritage, and especially the cult assemblages containing little data and allowing a wide berth for interpretation, as the fossils of a set of symbols, the integrated part of a bygone system of communication, and the reflection of spiritual contents in the material culture.

In their opinion, every element of the archaeological legacy must be interpreted; the overall goal of post-processual analysis is to decode the symbols of a given society (culture).[151] Since historical conditioning is doubly present in the analysis and interpretation of archaeological finds – firstly, the finds themselves and, secondly, the archaeologists are all children of their own age – any interpretation becomes virtually improvable. I. Hodder's theses were taken many steps further and exaggerated almost to the point of caricature in the works of theoretical archaeologists, such as M. Shanks and Chr. Tilley, who argued that the interpretative range of archaeological finds was devoid of even a semblance of objectivity.[152] The essence of their rather tongue-in-cheek studies and lectures was that all interpretation was essentially entrenched in the present and that the finds themselves were secondary. "Anything goes" in interpretation, depending only on the subjectivism of the interpreter. Excavations themselves are a waste of time and downright harmful. The outrage following this opinion is quite understandable.[153]

A few moderate analyses were also born in the heat of these debates. For example, C. Renfrew refined the concept of cognitive archaeology, an outgrowth of the New Archaeology, on the strength of I. Hodder's critique.[154] Renfrew and his followers argued that material culture was a more-or-less accurate reflection of the mindset of the people who created that culture – they were content to attempt to understand the nature of this mindset and its impact on the actions of the given community. This is far from actually "understanding" the meaning of cult objects and cult phenomena, a field they left to postmodern archaeologists.

For my part, I favour one specific direction of post-processualist archaeology: I believe that finds should be viewed in their archaeological context and that interpretations should be constructed in view of that context, a position I set down clearly in my CSc. thesis (1988) and its slightly abbreviated English version.[155] It is my conviction that the analysis of cult finds together with their archaeological context is no more hazardous than that of any other object and that it holds out the same promise of success.[156]

[148] *Binford* (1968).
[149] *Trigger* (1989) 350.
[150] *Walde–Willows* (1991); *Conkey–Williams* (1991); *Conkey–Tringham* (1995); *Tringham* (1991).
[151] *Hodder* (1982); *Eggert–Veit* (1998) 42–44.
[152] *Tilley* (1991); *Shanks–Tilley* (1987).
[153] *Bintliff* (1991); *idem* (1993); *Holtorf* (1993); *Lüning* (1991); *Renfrew* (1993).
[154] *Renfrew* (1985); *Renfrew–Zubrow* (1994).
[155] *Bánffy* (1990-91).
[156] Cp. *Bertemes–Biehl* (2002), 16, for a broadly similar view.

During the past decades, our perception of Neolithic religious beliefs has been shaped by the many research projects and studies on this subject. The Neolithic households of South-East Europe were the settings of ordinary, day-to-day activities – at the same time, these could at times have been vested with a symbolic, religious function. In the case of house models and altars it could be demonstrated that the different types were made at different times and for different occasions since some objects depicted the house or the altar in their ordinary, profane form, while others in their festive, sacral form.[157] I believe that Neolithic rituals and cult life were the private affair of individual families and that everyday acts were vested with a sacral meaning by various rites that served to ensure the order of the microcosmos. The transformation of the ordinary, of the profane into the festive and the sacral can be traced on various types of cult finds or, to use a different expression, on different *objets d'art*. The Neolithic household provided a framework for different aspects of life, such as gender roles both in the family and in the community, as demonstrated by J. Chapman and R. Tringham's several studies. I. Hodder's concept of *domus* is useful in this sense[158] for it describes the communal unit of the South-East European Neolithic where rituals were performed and where the cult finds are found during an excavation; the house and its yard, the space around it were all important parts of the *domus*. It must here be noted that that this type of cult practice underwent a significant transformation when the central orientation of tell settlements was replaced by the loose chains of farmsteads with north-oriented longhouses. The contrast between *domus* and *agrios*, the outer world, obviously took on a different meaning on a closed settlement where everyday activities were conducted in the communal spaces between houses than on a settlement where everything beyond the house was part of the *agrios*, of the external world.[159]

The main line of reasoning in the interpretations challenging M. Gimbutas' views was that not all idols can be regarded as depictions of the Magna Mater since they probably had a variety of other functions. P. Ucko's monograph categorized the female depictions of the Eastern Mediterranean in this spirit, similarly to the studies written by L. Talalay, Chr. Marangou and P. Biehl.[160] D. Bailey, K. Gallis and L. Orphanidis went as far as to suggest that the Neolithic idols from Bulgaria and Thessaly were in fact individual portraits.[161] I. Hodder believes that the figural representations of the Neolithic were an expression of power created by the depiction itself – to which D. Bailey added that idols were means of transmitting ritual knowledge and important cultural values. B. Bender noted that control of ritual knowledge was a sign of the existence of a social hierarchy.[162]

Accepting these views, Neolithic idols should be interpreted along entirely different lines than previously. We should forget about "Frog Goddesses" and "Resting Peasants" alike.[163] A different meaning can be construed for idols recovered from different contexts: for example, the high number of more or less identical idols used for initiation rites in a communal building or a statuette from a house used before giving birth vested the same idol with a different meaning, ranging from teaching devices to a chthonic function. Still, it is unlikely that these figurines depicted priestesses. J.-P. Démoule and C. Perlès' analysis revealed that there is nothing in the archaeological record to suggest that such an institutionalized function could be attributed to these idols.[164] If this is indeed the case, we can hardly speak of goddesses or deities. In their study on the figural representations of the Aegean, D. Kokkinidou and M. Nikolaidou arrived at a similar conclusion: instead of a pantheon, the cult

[157] *Bánffy* (1986b); *idem* (1990–91); *idem* (1994); *idem* (1997).

[158] *Hodder* (1990).

[159] Cp. Chapter 2 and 3 on the architecture of the site, especially the section on orientation.

[160] *Ucko* (1968); *Ucko* (1996); *Talalay* (1983); *idem* (1987); *Marangou* (1992); *Biehl* (1996); *idem* (1997).

[161] *Bailey* (1994); *Gallis–Orphanidis* (1996).

[162] *Bender* (1985).

[163] *Kokkinidou–Nikolaidou* (1997) 101.

[164] *Démoule–Perlès* (1993).

life of farmers was characterized by some form of ancestor worship, a belief in higher, impersonal natural powers and rituals performed inside the house.[165]

Vestiges of pre-Neolithic beliefs

The above brief overview reveals that the cult finds and religious beliefs and, through them, the social organization of early farming communities have never failed to hold the interest of prehistorians during the past two centuries. The research of the Mesolithic in Central Europe stands in sharp contrast to this. Although there has been a welcome proliferation of studies on the Mesolithic environment, the population density of Mesolithic Europe, the assumed population movements during the Mesolithic, the subsistence strategies of Mesolithic groups and even the health of individuals based on skeletal finds (cp. Chapter 10), very little is known about the social organization and the beliefs of these Mesolithic communities. Only the imports of Szentgál radiolarite and Rijckholt flint in faraway, distant regions indicated some form of social interaction and the importance of trade and other contacts.[166] The study of the Mesolithic appears to have been appropriated by the natural sciences, especially in the light of more recent research. R. Bradley wryly noted that "Neolithic farmers have social relations with each other, Mesolithic hunter-gatherers have ecological relations with hazelnuts".[167] Nevertheless, knowing that archaeologists by necessity study and discuss issues for which there are relevant data sets, one cannot blame prehistorians studying the Mesolithic of Central Europe for working with what they have.[168]

Our knowledge of the beliefs of the hunter-gatherer tribes and populations can hardly be reviewed on the basis of the Mesolithic settlements of Central Europe and the grave goods deposited into the few known burials. I have therefore also drawn from a few studies discussing the Upper Palaeolithic and Epipalaeolithic population groups who had a similar lifestyle and whose legacy includes finds reflecting a cult life other than cave art. Similarly, I will also quote a few findings of the preceramic Neolithic (PPNA and PPNB) of the Ancient Near East since it seems likely that the beliefs of the Central and South-East European pre-Neolithic hunter-gatherer communities cannot have evolved along entirely different lines. A contact between the two populations can be assumed in many regions, including Central Europe.[169] There is increasing evidence that far from being passive onlookers as earlier assumed, the indigenous Mesolithic population played an active role in the transition to the Neolithic in the Danube Gorges.[170] Another region in which contact between the Mesolithic and Neolithic populations can be assumed is the Balkans.[171]

According to St. Mithen, symbolic thought and the use of symbols appeared in the Upper Palaeolithic when the human mind integrated the knowledge and information stored in separate 'chapels' of the brain and transformed it into a 'cathedral', and thus became capable of drawing conclusions based on knowledge acquired in other wakes of life.[172] In his view. this marked the birth of 'cognitive fluidity' and of the 'modern mind', of flexible and creative thought.[173] I. Wunn noted that two types of realities are in constant flux in the human mind: information on the surrounding world of lesser importance and information provided by the nervous system of greater significance is combined to create an evaluation of the world and of the ego.[174] Symbolic thought, called to life by the need for communication and the general necessity for co-operation, can be demonstrated for hunter-gatherer societies. Although the symbols themselves are arbitrary and

[165] *Kokkinidou–Nikolaidou* (1997) 101.
[166] *Lech* (1987) 375.
[167] *Bradley* (1984) 11.
[168] *Zvelebil* (1993) 421.
[169] *Gronenborn* (1998); *idem* (1999).
[170] *Voytek–Tringham* (1989) 492.
[171] *Chapman* (1989b) 512; *idem* (2001a) 157–159.
[172] *Mithen* (1996a) 151–153.
[173] *Mithen* (1991); *idem* (1996a) 153, 165–166.
[174] *Wunn* (2001) 10–11.

the meaning attributed to a specific symbol may vary in space and time, symbols were necessary for the organization of hunting and the distribution of the booty and other resources, as well as for transmitting knowledge to younger generations. St. Mithen argued that a receptiveness to symbols can also be traced in the manufacture of purpose oriented tools instead of the earlier, uniform implements – by removing the superfluous sections of an antler, a special tool suited only to fishing was created.[175] In this sense, transformation itself is a symbolic event.

Rituals, an early form of religion, were most likely practiced by pre-Neolithic hunter-gatherer communities. In an earlier study I have discussed in detail the concept of *numinosum* introduced by R. Otto that I consider to have been fundamental in this respect.[176] The concept of *sacré* as an expression of a universally present conscious structure was first proposed by M. Eliade, based on R. Otto's thesis.[177] The idea of the "awesome" and of the "sacred", the practice of conferring qualities transcending biological and everyday experience on various objects and phenomena developed in all mobile communities. The core of any religion is made up of two components: (a) the belief that inanimate objects of nature (water, rocks, the Moon) possess the qualities of animate beings (humans, animals, plants): they too are born, they live and they eventually die; and (b) the belief that all actors of the world may possess qualities that contradict the laws of biology: these include man himself after his death, all beings that belong to a supernatural power and, later, deities. Irrespective of whether one attributes a sacral or a practical function to Upper Palaeolithic cave art, the archaeological evidence suggests that the mental structures described above emerged well before the Neolithic and that they had an impact on the mobile communities' perception of the world, from which it follows that rites, a series of repetitive acts ensuring the correct functioning and order of the world, too made their appearance.[178]

If inanimate objects can behave as animate beings, animals too can have the same range of feelings and behave as humans or, conversely, humans can behave like animals. One of the basic qualities of the world is that all of its actors function similarly – plants and especially animals can think and act according to a human mentality. The opposite can also happen. The anthropomorphization of animals can be traced in folk tradition to this very day, while its opposite, totemism was a salient feature of all hunter-gatherer societies. St. Mithen has argued that transitional creatures, beings that are half-animal and half-human, certainly existed in the human imagination since the Upper Palaeolithic. To which we may add that these creatures survived into the Neolithic and that the mythical beasts of classical mythologies are most certainly their descendants.[179]

Animals were especially important elements of nature in the life of the hunter-gatherer communities: they were a major source of food, their behaviour often forewarned of some danger and by the Mesolithic some became man's companion: dog was a domesticate by this time[180] and we know that pig and, in some areas, cattle was domesticated in temperate Europe during the Mesolithic.[181]

[175] *Mithen* (1996a) 185.

[176] *Bánffy* (1990–91) 196; *Otto* (1963).

[177] *Eliade* (1969); *idem* (1976).

[178] *Mithen* (1991); *idem* (1996b) 86–95; In his new study, St. Mithen lists five traits common to all religions: *idem* (1998) 98–99.

[179] Cp. *Bánffy* (2002c), with an analysis of the religious background of the various half human, half animal creatures depicted in the Lengyel and Vinča cultures. At the time, it did not occur to me that the depiction of human beings as animals was perhaps an expression of totemistic beliefs. If this was indeed the case, a strong Mesolithic influence can be assumed in the Middle and Late Neolithic of the Central Balkans and the Carpathian Basin.

[180] The animal bone sample from Lepenski Vir contained a high number of dog bones. In *Bökönyi*'s interpretation (1969; 1970) dogs were domesticated for amusement and dogs were used mainly in hunting. In contrast, Ruth Tringham has argued that dogs were used for herding more or less domesticated deer herds. Cp. *Tringham* (1973) 562. Domesticated dogs have also been found in Moldavia at the Soroki site of the early Bug–Dniester culture. *Markević* (1965).

[181] *Zvelebil* (1995) 86; *Rowley-Conwy* (1986) 23.

The preceramic site at Göbekli Tepe in southeastern Anatolia did not yield any domesticates, only the bones of a wide range of wild species.[182] The plant remains similarly represented wild species; similar plants grow in the area today. This is hardly surprising since the communities that felt the need to commemorate their regular meeting place by erecting monumental stone structures did not leave any indications of sedentism. H. Hauptmann and K. Schmidt have interpreted this site, abandoned and artificially filled up at some point in the pre-pottery Neolithic period, as a central place with a focus on ritual activities, resembling the other major – and unique – sites of the region, such as Nevali Çori.[183] The largest stone of this architectural monument that can rightly be termed a megalith is over fifty tons and there can be no doubt that its construction called for the concerted labour of many individuals and, also, that the stone steles could hardly have been transported to the site without a high level of organization. None of the buildings with a terrazzo floor contained hearths; the T shaped stone columns of these structures were arranged into several rows.[184] Lions, bulls, foxes, snakes and half-human, half-animal creatures depicted in relief populate the stone columns, one of the perhaps most interesting features of this unique site.[185] K. Schmidt is convinced that sites similar to the pre-Neolithic central places at Nevali Çori, Çayönü and Göbekli, all lying in the "Golden Triangle" enclosed by the Taurus Mountains, the Upper Tigris, the Upper Euphrates and the Khabur region, will also be discovered in Turkey and in other regions of the ancient Near East.[186]

Sculpture in the round first appeared during the PPNA in the Levant.[187] O. Bar-Yosef has argued that the statuettes were placed in the communal building and that their manufacture was a response to the tensions created by an incipient social ranking.[188] G. Rollefson proposed a similar interpretation for the clay plastered skulls with inlaid shell eyes found at Ain Ghazal.[189]

A major transformation can be noted in the small sculpture of the ancient Near East in the 9th Millennium BC: the earlier "ambivalente Darstellung" types are replaced by standing and sitting figures and with female figurines holding their hands clasped under the breasts.[190] Zoomorphic and, later, anthropomorphic vessels and house models made their appearance during the PPNB – these became the most important and most frequent items in the cult inventories of the South-East European Neolithic. Only the custom of erecting monumental stone sculptures appears to have faded from the cult traditions of the early agriculturalists colonizing Europe. At the same time, there is a consensus that the new, Neolithic type of sculpture made its appearance among the pre-Neolithic hunter-gatherer tribes of the Near East at roughly the same time as the first indications of sedentism and social organization in the archaeological record.[191]

A hiatus can be noted during the centuries of the Mesolithic following the anthropomorphic representations of the European Gravettian. This may be one of the reasons that the study of idols practically begins with the Neolithic. Interestingly enough, figurines were not produced in the European Mesolithic, in spite of the fact that – compared to the Upper Palaeolithic – there was probably an increased need for expressing social organization and an incipient social ranking, one of the explanations cited as the ultimate reason for the creation of figurines.

[182] *Schmidt* (2000) 47–48.

[183] *Hauptmann* (1999).

[184] For the reconstruction of the two buildings uncovered at Nevali Çori, cp. *Hauptmann* (1999) Fig. 9.

[185] *Schmidt* (2000) 53; *Hauptmann* (1999) Figs 10–35.

[186] *Schmidt* (2000) 53–54. Another site of this type has been excavated at Nemrik: *Kozłowski* (2002).

[187] *Cauvain* (1994).

[188] *Bar-Yosef* (1984); *idem* (1997).

[189] *Rollefson* (1983); *idem* (1986); *Hansen* (2000), 40. S. Hansen has suggested that the coffee-bean eyes of the South-East European Early Neolithic imitated cowrie shells. I do not agree with his interpretation – in my opinion, the Balkanic eye type should rather be interpreted as cereal grain depictions. Genuine cereal grains were set into the animal (or human) headed altar found at Kéthely.

[190] *Hansen* (2002) 40.

[191] *Bar-Yosef–Meadow* (1995) 89–92.

The creation of base camps for storage can be observed more clearly from the early Mesolithic in Europe.[192] It has been shown, for example, that of the two Hungarian campsites known from this period, Ságvár and Pilismarót–Pálrét, the former was probably a base camp, the latter a so-called satellite site.[193] Still, our knowledge of customs differing from the usual day to day activities is rather scanty for the European Mesolithic. A number of Scandinavian burial grounds offer some clues as to the complexity of mortuary practices and their symbolism: L. Larsson has reported on a complete dog skeleton found in a burial, on incomplete dog skeletons found in three other burials and on eight separate dog burials.[194] It would appear that domesticated dogs were not only seen as companions in afterlife, but were also buried in their own right.

The assemblage of buried skulls found at Ofnet Cave in southern Germany is not merely an indication of armed conflict and aggression.[195] A total of thirty-three male, female and child skulls lay in the "nest of skulls". Over four thousand shells, native to the Central Danube region and the northern Mediterranean, lay around the female skulls. Similar Danubian shells were found near the skull burial at Höhlenstein–Stadel.[196]

These few examples suggest that symbolic thought and artistic creations can be assumed for the period preceding the shift to sedentism and a farming economy in Europe. There is increasing evidence that the perfection of tool manufacture and in the emergence of far-ranging contacts well before the advent of the Neolithic is a reflection of an incipient social ranking.

Interestingly enough, none of the objects that reached distant regions and left a trace in the archaeological record – various lithic raw materials, recent and fossil shells – were commodities necessary for basic subsistence. Good quality rock was available near most settlements, including Pityerdomb. However, the occupants of Pityerdomb procured cores for their tools from the Szentgál mine, lying at a distance of some 200 km. Similarly, about one-third of the stone tools used at the early Linear Pottery settlement of Brunn near Vienna was manufactured from the raw material mined in the Bakony Mountains; D. Gronenborn has noted that red Szentgál radiolarite was transported as far as central Germany.[197] One possible explanation for the consistent preference of this rock type and the wide distribution of Danubian shells and, later, of Aegean Spondylus could be that there was a demand for commodities that were not readily accessible and whose possession was suitable for enhancing their owner's prestige and for symbolizing social status. This would fit nicely with the suggestion that some rudimentary form of social ranking had emerged before the Neolithic.

It has also been suggested that the ownership of domesticated animals and plants was also means of enhancing social prestige.[198] This assumption can obviously be challenged or downright rejected on the grounds that food production, the active manipulation of the environment, was an economically useful activity. Yet, it has also been demonstrated that the life of farmers was in many respects more difficult and more toilsome than that of hunter-gatherers.[199] The daily amount of time devoted to the production of food rose significantly; women gave birth to, and raised, more children who would help them in their work. The lactation period decreased because babies

[192] Cp. *Bender* (1975) 137; *Bailey* (1983); *Rowley-Conwy* (1983); *Rowley-Conwy–Zvelebil* (1989); *Miracle–O'Brien* (1998); *Tringham* (1973) 560–562; *Price–Brown* (1985); *Zvelebil* (1986); *Kozłowski–Kozłowski* (1986); *Runnels–van Andel* (1988) 83, 102, etc.

[193] *Vörös* (1982); *Logan* (2000) 191–192.

[194] *Larsson* (1990a) 155, Fig. 1.

[195] *Jochim* (1998) 212.

[196] *Jochim* (1990) 188–189. *Rähle* (1978), also discussed the problems of origins.

[197] *Gronenborn* (1994); *idem* (1997).

[198] *Mithen* (1996a) 223–224.

[199] *Tringham* (2000); *Radovanović* (1996); *Voytek–Tringham* (1989); *Mithen* (1996b); *Bar-Yosef* (1984); *Rozoy* (1996); *Gronenborn* (1994); *Bonsall et al.* (2000); *eadem* (1997); *Bettinger* (2001) 167-172.

were separated earlier; the inferior food, lower in protein, led to a general health deterioration and to the decrease of the average life expectancy.[200] It also seems likely that communities suffering from a bad harvest were apt to be decimated by famine.[201] Sedentism also involved the accumulation of trash, giving rise to epidemics. In view of the above, it seems premature to reject the interpretation of Neolithic innovations as prestige commodities.

Late Starčevo pottery and cult finds occur in many early Linear Pottery assemblages that should perhaps be better regarded as transitional assemblages. It is possible that the acceptance and adoption of the lifestyle, the clay vessels, the cult paraphernalia and perhaps the beliefs of the newcomers from the south in the early phase of the Neolithic was motivated by considerations of prestige, rather than by gaining economic advantages!

One obvious consequence of the shift to sedentism and to a production economy was the creation of food stores – the accumulation of foodstuffs no doubt stimulated the emergence of an incipient social ranking. In his study on the distribution of food among modern hunter-gatherer tribes, J. Woodburn found that two main strategies could be distinguished. Tribes without base camps and storage facilities practiced an immediate return economic strategy, in other words, they immediately distributed the hunting booty among themselves, while groups that created storage facilities practiced a delayed return strategy, enabling the accumulation of food. Individuals or groups with more food obviously enjoyed greater social prestige. Woodburn suggested that a similar process can be assumed for the Mesolithic and that one precondition of the shift to a Neolithic lifestyle was the emergence of an incipient social ranking.[202] P. Rowley-Conwy and M. Zvelebil arrived at a similar conclusion from their study of the archaeological record; M. Tellenbach too argued for a similar process from his analysis of the pre-ceramic Neolithic sites in South-East Europe.[203]

The emergence of social ranking and of a set of beliefs differing from those of agrarian communities apparently began during the early Mesolithic. The Mesolithic landscape had its own symbolic landmarks, places of sacred power, such as the barren mountain peak towering above Lepenski Vir;[204] it seems likely that waters too had a special meaning. The settlement of Mesolithic communities in close proximity to water cannot have been mere chance: rivers, streams and lakes carved out by the earlier ice sheet were a major source of food and played an important role in their life. It seems to me that Lake Balaton was a locality with both a practical and a symbolic meaning.[205] Hunter-gatherers probably did not draw a sharp distinction between the animal and the human world, but viewed them as part of the same landscape.

The process of transition

The early farmers of South-East Europe brought with them a material culture rich in cult paraphernalia, reflecting a developed set of beliefs. A gradual transformation can be noted in the Carpathian Basin and especially in the Central European regions beyond the Carpathians. What are the indications of this transformation and can we suspect cultural impacts from the local Mesolithic?

In one of his studies on the transition from the Mesolithic to the Neolithic, D. Gronenborn claimed that some Linear Pottery symbols were rooted in the Mesolithic,[206] quoting various examples from the Central European regions lying beyond the Carpathians. Gronenborn suggested that the

[200] *Angel* (1984) 58–62; *Meiklejohn–Schentag–Venema* (1984); *Meiklejohn–Zvelebil* (1991).

[201] *Harlan* (1995) 12; *Hayden* (2001) 252.

[202] *Woodburn* (1982).

[203] *Rowley-Conwy–Zvelebil* (1989) 40–41; *Tellenbach* (1983) 124.

[204] *Bánffy* (1990–91) 205.

[205] The marshland around Lake Balaton, where the early Linear Pottery settlements lie, was most unsuited to cereal cultivation. For a discussion of these settlements and their Mesolithic background, cp. Chapters 9 and 10.

[206] *Gronenborn* (1999) 173.

cremation burials found on early Linear Pottery sites in Little Poland represent the Mesolithic tradition in the archaeological record.[207] He regarded the burial of an adult woman on the Samborzec settlement as an excellent example of Mesolithic symbolism: the grave goods from this burial included a necklace strung of animal teeth and bone beads lying in the region of the pelvis, probably the remains of a belt.[208] In Gronenborn's interpretation, these were indications of a mortuary practice alien to the traditions of early Balkanic farmers: the presence of animal teeth perhaps reflected the adoption of an animal identity, a practice differing significantly from the Linear Pottery traditions. He argued that the woman buried at Samborzec was a shaman.[209] At the same time, the earth around the deceased woman's head was sprinkled with red ochre, a practice that fits in with the Balkanic, Körös–Starčevo tradition. The artistic relics of the late Mesolithic from Denmark generally take the form of stone engraving depicting various animals, birds, boats, as well as hunting and dance scenes with humans; however, the human figures rarely include expressly female ones.[210] The Mesolithic depictions of Spanish rock art were carved in a similar vein.[211] Depictions resembling the Magna Mater or the Great Goddess of the South-East European fertility cults have not yet been found in Mesolithic art and its artistic vocabulary.[212]

It has been shown in the above that the cult finds from Pityerdomb indicate cultural impacts from the Balkans. The same holds true for the Gellénháza idol and the altar fragment. It is possible, however, that idols with a tilted-back head can be regarded as a local type. Although the indication of coiffure and hair-style can be noted on the Early Neolithic idols from Thessaly,[213] the tilted-back head and a coiffure of curly locks (sometimes indicated with tiny globules) first appeared on the early Linear Pottery sites of Transdanubia. The strongly worn idol head from Pityerdomb perhaps represented this type.

Another find suggests that one of the cult devices of the Starčevo culture was copied by an individual who had just begun to familiarize himself with Neolithic innovations. The altar fragment from Kéthely, a site lying on the eastern fringes of the Little Balaton region, can be assigned to the type decorated with human or animal heads, resembling its renowned forerunner, the altar from Lánycsók. The specimen from Kéthely, however, was made from poorly fired and poorly levigated clay tempered with chaff. The effort to copy the Balkanic cult object is reflected also in the fact that in contrast to the altar from Lánycsók and the other South-East European pieces decorated with animal or human heads, two cereal grains denoted the eyes of the head on the Kéthely fragment. This suggests that cereal grains were a powerful symbol of agriculture and, also, of sedentism and food production. The use of this symbol most likely also indicates a knowledge of and, perhaps, the adoption of the worship of the supernatural powers revered by the Balkanic immigrants. The two grain eyes can perhaps be interpreted as a symbol of the wish to assimilate to the world of early farmers.

The other major change was the gradual disappearance of the idols' buxomness, of their corpulence and steatopygia, as well as of the representation of pregnant women and their replacement with angular, flat idols. Idols practically disappeared from Central Europe during the Linear Pottery period. A few idols were still made during the early Linear Pottery period, mostly in regions such as such as Brunn II in Ausria, Eilsleben in the Elba–Saale region, and Bad Nauheim–Niedermörlen in the Wetterau area to the northwest that, on the testimony of the archaeological finds, were reached fairly rapidly by the Transdanubian Neolithic communities.

[207] *Gronenborn* (1999) 175. Cp. also *Cziezla* (1992).
[208] *Kulczycka-Leciejewiczowa* (1988) 176.
[209] *Gronenborn* (1999) 178.
[210] *Larssen* (2000).
[211] *Beltran* (1982).
[212] *Newell et al.* (1990).
[213] *Papathanassopoulos* (1996) Cat. no. 233; *Gallis–Orphanidis* (1996) Cat. no. 12–24.

The finds from these sites, especially from the two latter ones, reveal a striking resemblance to the formative Transdanubian Linear Pottery from Pityerdomb and to the late Starčevo site at Vörs–Máriaasszonysziget.[214] Conforming to the general pattern of neolithization, the distribution of cult finds reveals a mosaic patterning, rather than a steady and even diffusion. Figurines virtually disappeared during the later Central European development. A rare idol from the Rössen or the Münchshofen group, contemporaneous with the Hungarian Late Neolithic and Early Copper Age, can probably be ascribed to Lengyel influences, i.e. to cultural impacts from the southeast.[215] House models, altars and anthropomorphic vessels are virtually unknown west of Lower Austria.

When searching for possible local, hunter-gatherer elements in the beliefs of the early Linear Pottery communities, we must return for a moment to the decoration on the back of Linear Pottery idols. As mentioned earlier, O. Höckmann suggested that these herringbone and zig-zag patterns were in fact a representation of the skeletal bones, with the oblique lines symbolizing the ribs and the vertical line between them representing the spine. In his opinion, the symbolism of this "X-ray" style had more in common with the bone medicine and bone magic practices of the northern hunter-gatherer communities, than with the beliefs of the South-East European farming groups. The depiction of the skeleton or of individual bones can be regarded as early vestiges of shamanistic beliefs.[216] Höckmann also noted that in contrast to the emphatically female Balkanic depictions, the imagery of the Linear Pottery was genderless – only in rare instances was the female nature of idols indicated.

Accepting Höckmann's analysis, we may say that the Linear Pottery idols decorated with a herringbone pattern express the idea of South-East European clay figurines combined with the symbolism of the indigenous population.

These clay figurines disappeared after a while. The distribution of the idols of the Central European Linear Pottery is illustrated on S. Hansen's map, on which the boundaries of the early and late Linear Pottery distribution are also marked.[217] Not one single idol has yet been found in the late Linear Pottery distribution, a phenomenon that can be taken to indicate that the beliefs of the indigenous population proved stronger in Central and Northern Europe than the cultural influences from the south. Agriculture and pottery, as well as certain – modified – forms of house architecture survived and gradually transformed the original social structures. However, beliefs are by their nature highly conservative – it would appear that although the alien, Balkanic influences were endured for some time, they eventually faded from the collective memory.

This would answer one of Hansen's important questions that hovers throughout his study: why did figurines disappear during the Neolithic development of Central Europe? My answer to this question is that the two highly conservative set of beliefs clashed and that the beliefs of the local hunter-gatherer communities eventually proved stronger in the life of the Central European Linear Pottery communities.

The development of beliefs in the later Neolithic of the Carpathian Basin

The later development of the Carpathian Basin differed from this general tendency. Both the Transdanubian and the Alföld Linear Pottery developed its own forms of figural art that differed significantly from the Körös–Starčevo tradition. It must also be borne in mind that strong cultural influences from the south reached the Great Hungarian Plain during the early Szakálhát and the Vinča period; similar influences can be assumed in the southern part of the Danube–Tisza interfluve

[214] *Schade-Lindig* (2002a); *idem* (2002b).

[215] One idol of this type from the Münchshofen culture has been published by L. Kreiner. Cp. *Kreiner–Pleyer* (1999).

[216] *Eliade* (1982), esp. Chapter 5, parts 6–7, 159–161.

[217] *Hansen* (2002) 48.

during the Sopot–Vinča phase. The assemblage of flat, angular idols from Méhtelek represent an alien tradition that can probably be ascribed to the group's eastern, Transylvanian roots and contacts.

While still a student, I was taught about the many resemblances between the Körös and Szakálhát assemblages. For example, the Szakálhát storage bins and the anthropomorphic figurines reflect Early Neolithic Körös, rather than Linear Pottery traditions, immediately preceding the Szakálhát period. This would imply that the earlier South-East European cult traditions were affected by a strong cultural impact during the transition to the Linear Pottery culture, as a result of which there was a departure from the Balkanic traditions. In the Late Neolithic we can again observe the dominance of southern, Central Balkanic elements in the wake of new cultural influences from the south, even though marked differences can be noted in the statuary of the Late Neolithic Tisza culture of the Great Hungarian Plain and its southern neighbour, the Vinča–Pločnik culture. Figurines are rare in the Tisza culture and the few known figurines are all individual, unique creations, while the Vinča idols are, in a sense, mass products.

In Transdanubia, the cultural influences from the Sopot–Vinča culture mostly affected the later Linear Pottery settlements in southern Transdanubia. It is now fairly clear that the assemblages from the Keszthely type settlements along the southern shore of Lake Balaton and in western Transdanubia (e.g. Kustánszeg–Lisztessarok)[218] show a blend with Zselíz elements and that these southern influences became decidedly stronger during the Zselíz and early Lengyel period; the spatial extent of these influences coincides with the Lengyel–Moravian Painted Pottery distribution. This extent of this cultural impact outlines more or less exactly the geographic boundaries within which we may speak of figurine production and the manufacture of clay cult paraphernalia. The find assemblages totally devoid of South-East European elements suggest that the pre-Neolithic cultural attitudes and beliefs proved stronger north and west of this boundary.

This assumption is highly speculative, even more so than some of the ideas presented in other chapters of this book. The reason is fairly obvious: the archaeological record for the Mesolithic–Neolithic transition and the Early Neolithic is rather patchy compared to the later centuries of the Neolithic and to other archaeological periods. In the case of cult finds and religious beliefs, we are faced with the task of reconstructing a huge, colourful tapestry from minute scraps of textile. The explanation outlined in the above is one possible interpretation. It does not provide an overall explanation, but it will hopefully contribute to a better understanding of one specific period of prehistory and religious history, and will be suitable for serving as a starting point in evaluating new finds and, also, for testing.

It is also clear from the above analysis that western Transdanubia was an important tile in the colourful mosaic of transition. In this region, the interaction between the southern farmers and the assumed indigenous population led to the transformation of the South-East European Early Neolithic material culture; this transformation would perhaps have continued during the ensuing centuries, had not another strong cultural impact affected the region in the Vinča B2 period, at the end of the Linear Pottery development and during the formative phase of the Lengyel culture. This cultural impact has a number of yet unknown and unclarified aspects and only a better knowledge of the Transdanubian assemblages of the Sopot culture can contribute to the understanding of the nature of this cultural process. The finds from a number of recently investigated sites would suggest that the southern impact affecting Transdanubia at the close of the Middle Neolithic was stronger than previously assumed and that it played a greater role in the formation of the Lengyel culture.

[218] New sites of the Sopot and earliest Lengyel culture were identified and investigated during the excavations preceding the construction of the M7 motorway in southwest Transdanubia, for example at Petrivente and Sormás. The excavations were directed by L. Horváth, N. Kalicz and J. P. Barna.

Chapter 7

THE ABSOLUTE DATE OF THE PITYERDOMB SETTLEMENT AND ITS CHRONOLOGICAL POSITION AS COMPARED TO OTHER CONTEMPORARY SITES IN THE REGION

We collected samples for radiocarbon dating from both settlement nuclei of the Szentgyörgyvölgy–Pityerdomb settlement. In the lack of bone finds, these could only be charcoal remains, taken mainly from the hearth and the surrounding area (charred twigs, branches, firewood). With the help of P. Stadler, we sent these samples to Vienna to be analyzed using AMS as part of the VERA project (Vienna Environmental Research Accelerator) of the Naturhistorisches Museum.[1] The analytical results were broadly the same for the samples from both trenches *(Figs 147–154).* The following calibrated dates[2] were obtained for the ten evaluable samples: three began with the date 5480, five with 5470, one with 5460 and another one with 5620–5560 (Feature 18, a hearth). The earliest dates for the site indicate that the Pityerdomb settlement was established sometime in the decades after 5500. The latest dates similarly show little variation, falling between 5370 and 5320, the earliest date for the end of the settlement being 5450–5410 for a sample from Feature 18.

These dates suggest that the settlement was occupied for 120 years at most, roughly between 5480 and 5360, corresponding to not more than four or five generations.

How do the dates for Pityerdomb harmonize with the dates obtained for the late Körös and the late Starčevo culture in Transdanubia and the early Linear Pottery groups?

The series of dates available for the late Körös culture were primarily determined by the late E. Hertelendi.[3] The latest dates for Méhtelek correspond to the earliest dates for Pityerdomb.[4] The dates for the early Vinča site at Ószentiván VIII fall around 5400.[5] The series for two settlements of the Szatmár II phase on the northern fringes of the Great Hungarian Plain, representing the formative Alföld Linear Pottery. appear to be rather early: 5540–5422 for the initial occupation of the Füzesabony–Gubakút settlement,[6] and even earlier, 5600–5500, for the Mezőkövesd–Szentistván-Mocsolyás site.[7]

The end of the late ("Protovinča") phase of the Körös culture (Battonya–Basarága, Szarvas–Site 39, Endrőd–Site 6, Deszk–Olajkút) can be put between 5490–5300. Z. Kalmár-Maxim's date of 6400–5710 BP for the late Criş culture in Transylvania is rather late: 5366–4541 calBC (its end would correspond to the Late Neolithic Tisza culture).[8] C. Magda Mantu dated phase III

[1] I would here like to thank P. Stadler, A. Carneiro and their colleagues for their kind help. The entire series of dates will be published in vol. 28 of *Antaeus*. A description of the VERA project is available on the internet: www.nhm-wien.ac.at/NHM/prehist/Stadler/14C_project/index.html.

[2] The calibration was based on *Stuiver et al.* Radiocarbon 40 (1998) 1041–1083.

[3] *Hertelendi et al.* (1995); *Horváth–Hertelendi* (1994).

[4] *Nagy* (1998) 88.

[5] *Horváth–Hertelendi* (1994) 123.

[6] E. Domboróczki's kind personal communication. It is nonetheless surprising that the dates for this Alföld Linear Pottery settlement with a remarkably uniform settlement structure and find assemblage indicate a rather long life-span of 300–350 years, lasting until 5200.

[7] *Kalicz–Koós* (1997b).

[8] *Maxim* (1999) 63.

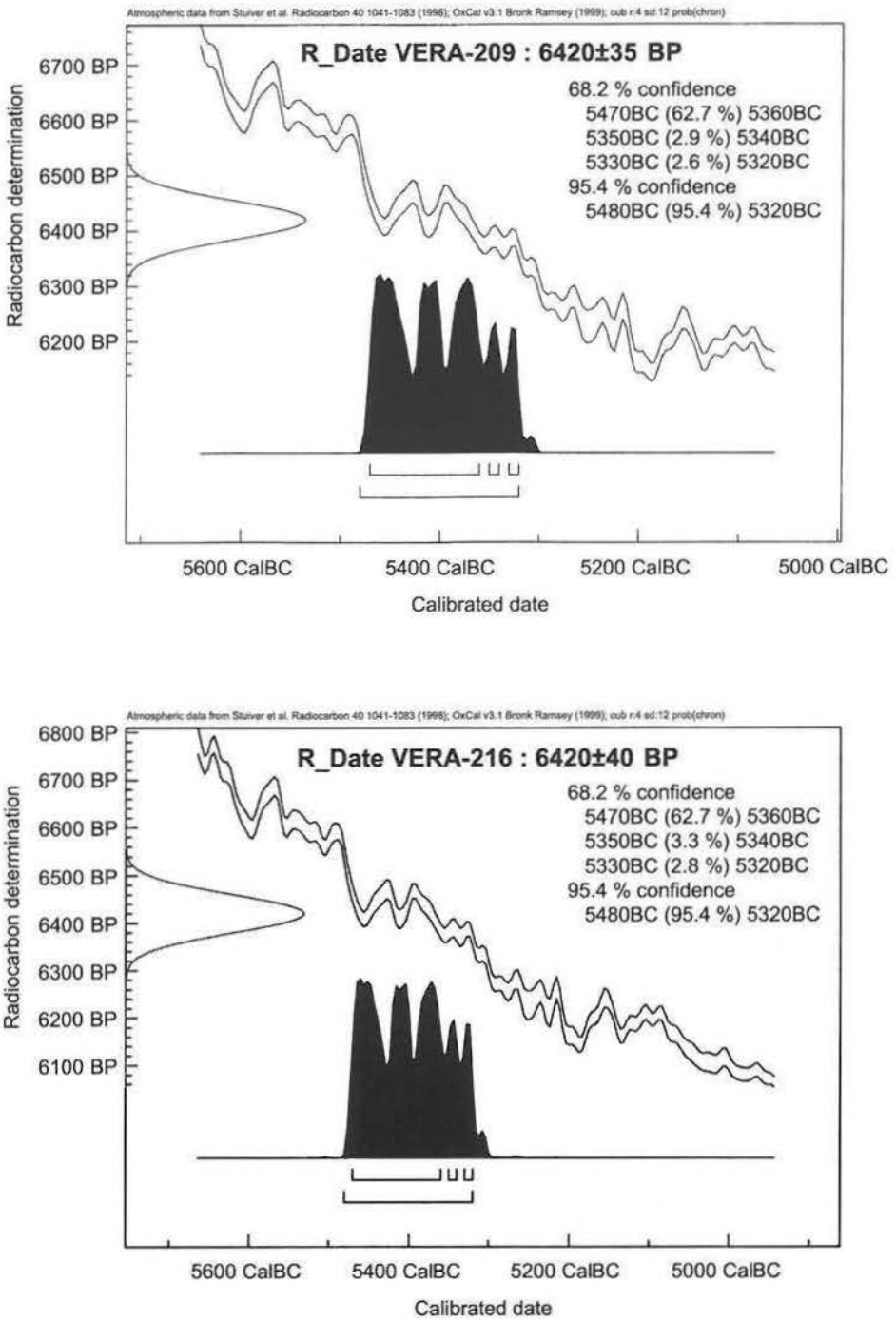
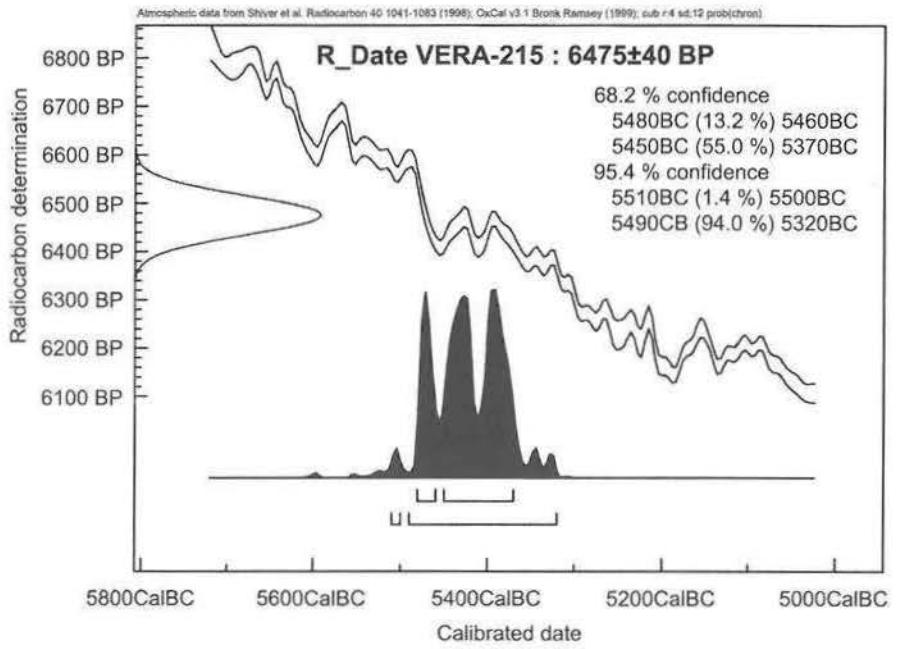


Fig. 147. Radiocarbon data for the samples from Feature 17



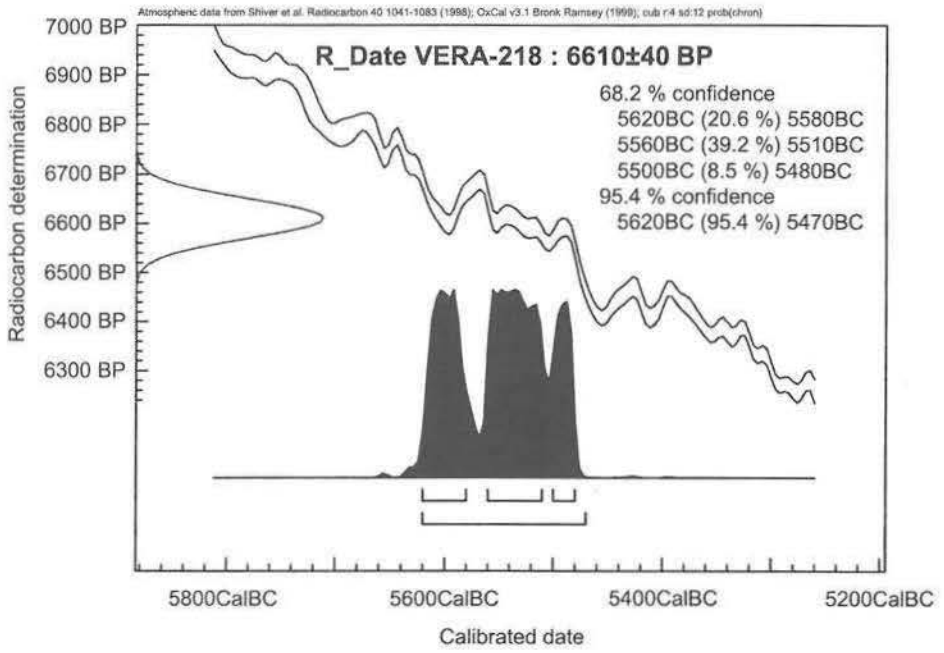
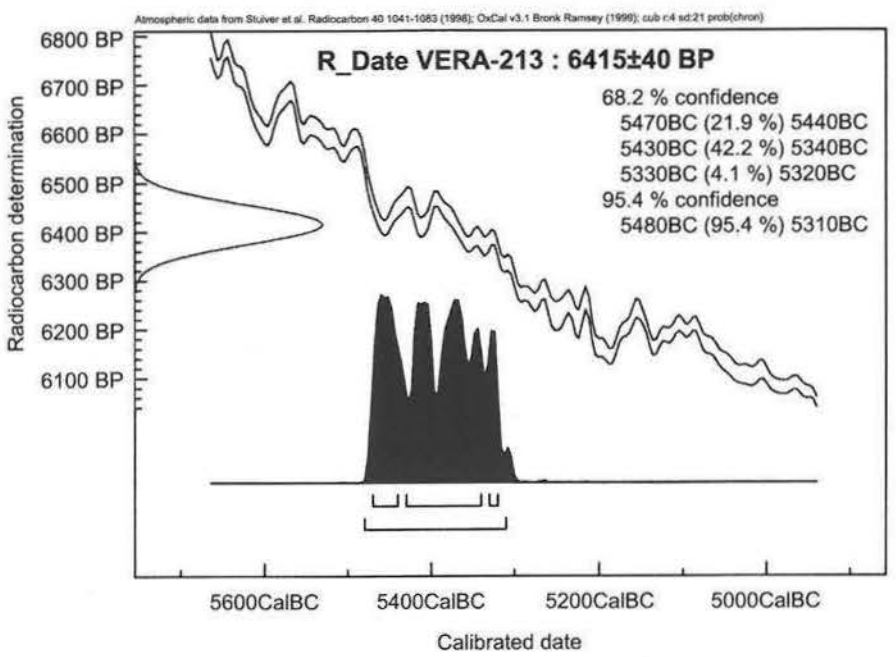


Fig. 148. Radiocarbon data for the samples from Feature 18



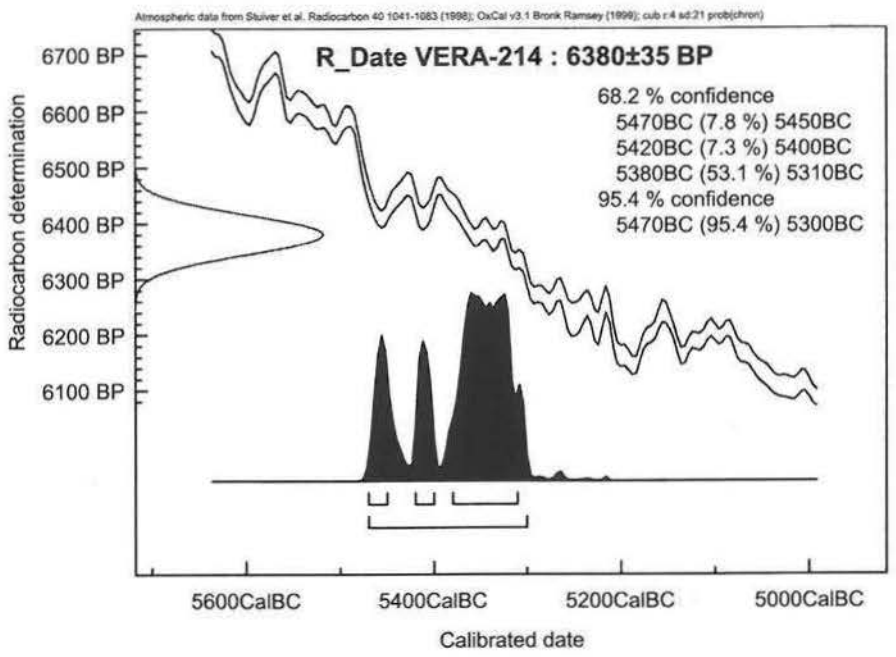
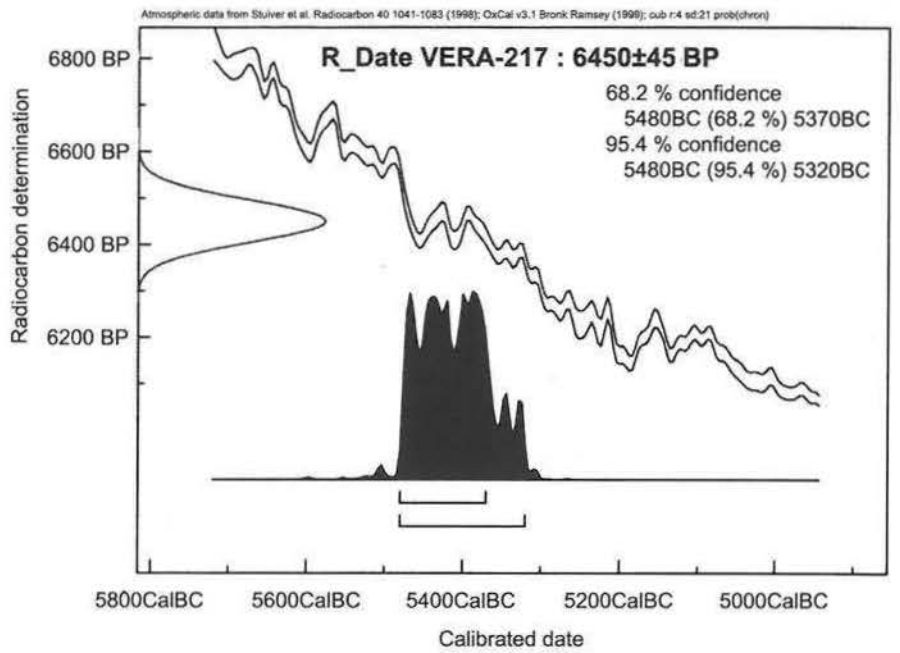


Fig. 149. Radiocarbon data for the samples from Feature 19



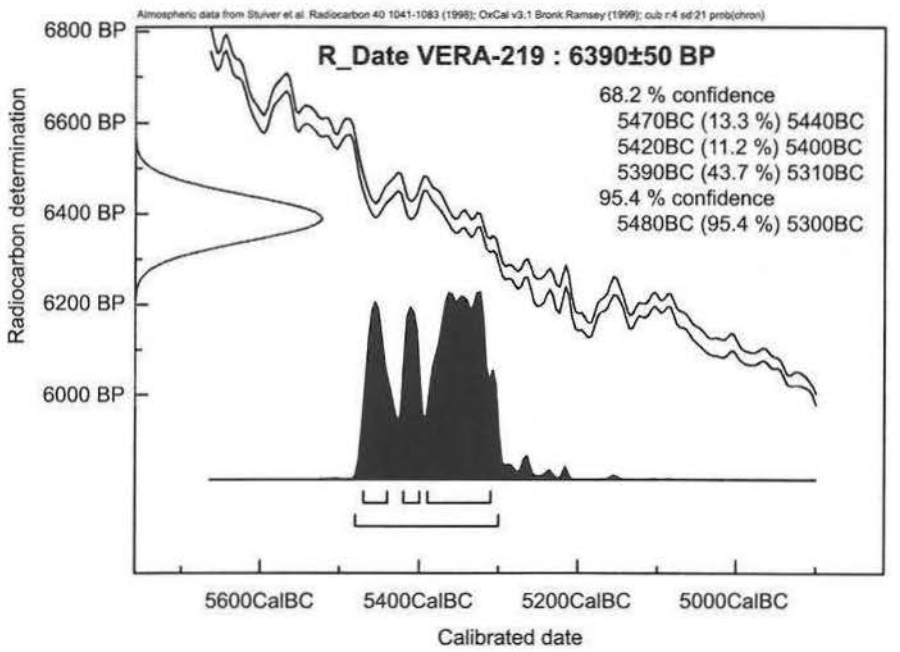
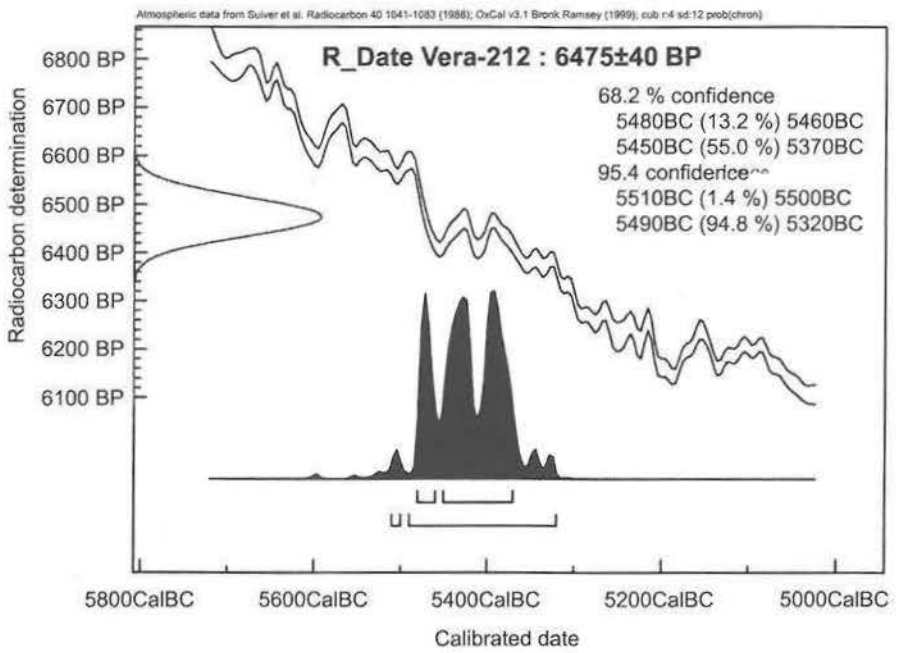


Fig. 150. Radiocarbon data for the samples from Feature 19



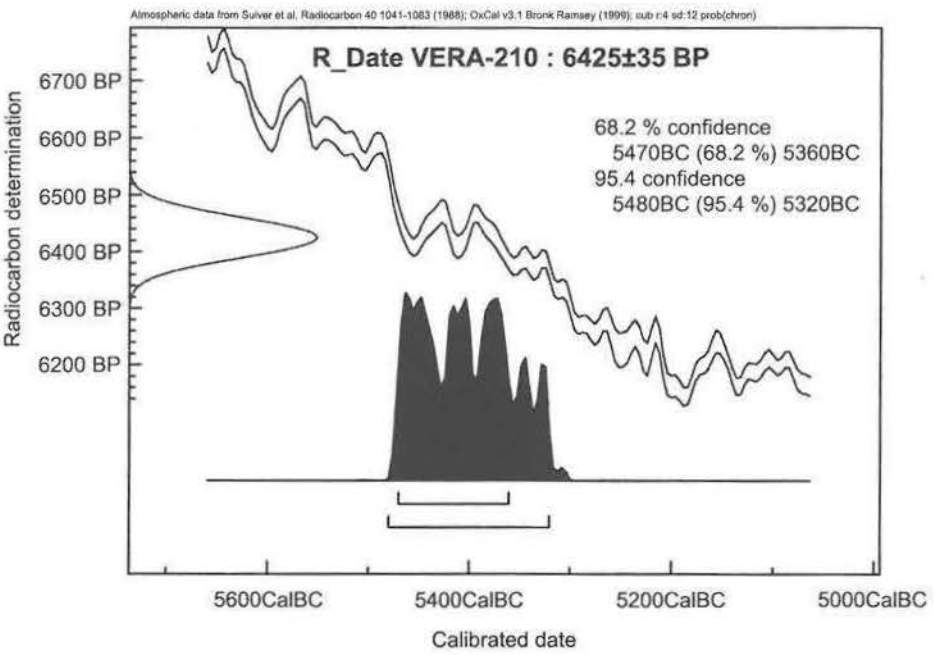
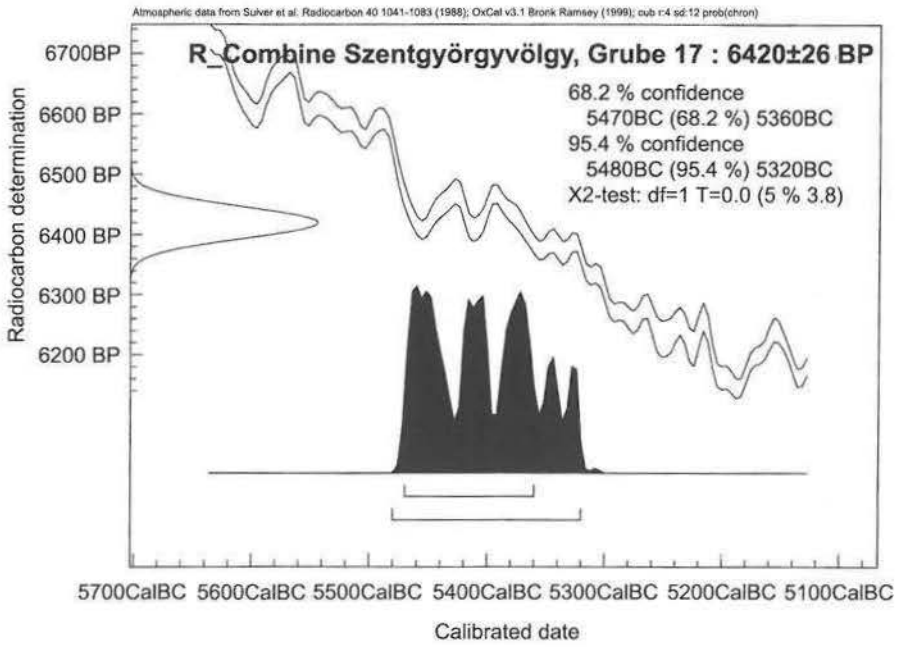


Fig. 151. Radiocarbon data for the samples from Feature 9 and from Feature 21



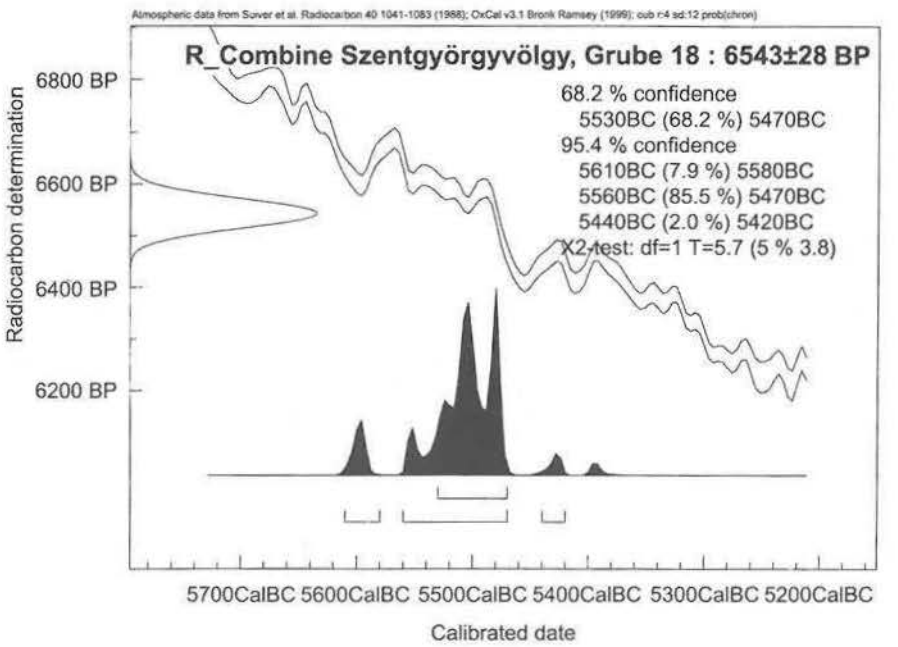
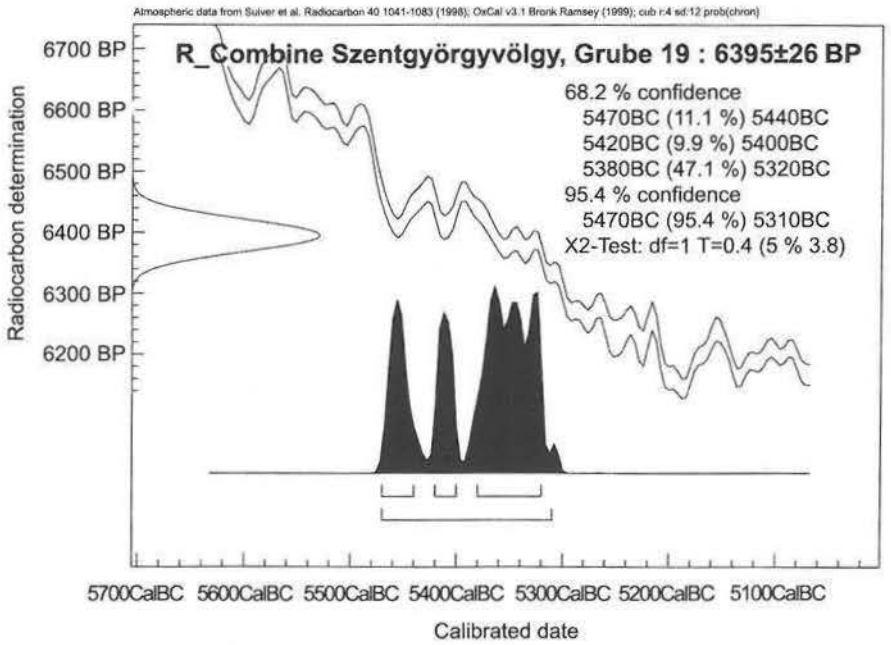


Fig. 152. Radiocarbon data for the samples from Feature 17 and from Feature 18



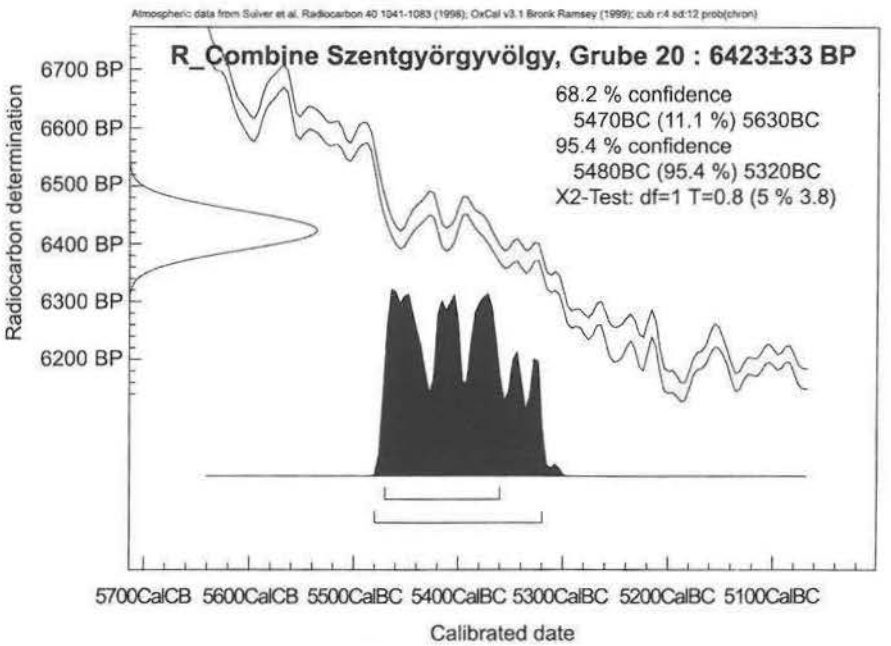


Fig. 153. Radiocarbon data for the samples from Feature 19 and from Feature 20

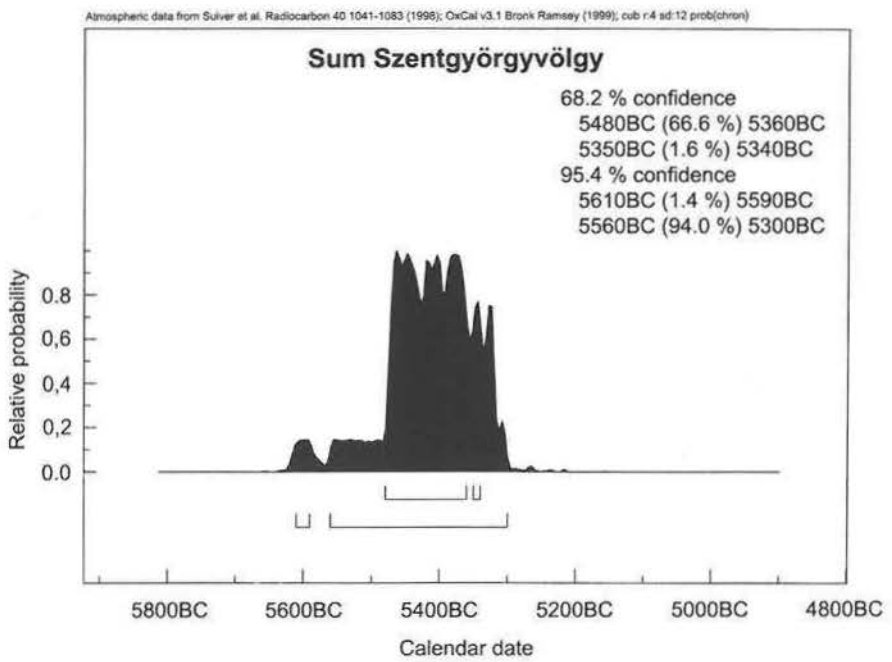


Fig. 154. Radiocarbon data from Szentgyörgyvölgy-Pityerdomb

of the Körös–Starčevo–Criş culture to an earlier period, assigning Frestiana IIIb, Sacarovca I and grave 6 of Gura Baciului (Bácsi Torok) (5474 BC), as well as the Copalecu–Valea Răii site in Oltenia, dated to 5483–5334 BC, to this phase. This phase would precede or only slightly overlap with Vinča A.[9] It must here be noted that W. Schier dated the beginning of Vinča A to 5400, while R. Gläser puts it no earlier than 5300.[10]

This chronological horizon is fairly uniform and clear in the south: it corresponds to the Hoca Çeşme II phase that according to M. Özdoğan can be correlated with late Karanovo I–early Karanovo II and the "Protovinča" period in the Great Hungarian Plain.[11] It can be equated with the second half of the Middle Neolithic in Macedonia, the early layers at Sitagroi (5420 BC) and there is also a similar date from Servia (5540 BC).[12] According to V. Nikolov, this corresponds to the second half of the Early Neolithic in Bulgaria and the beginning of the Middle Neolithic, when a contact zone emerged between the late Karanovo I culture and the Starčevo culture that survived until the Middle Neolithic.[13] These dates harmonize with L. Nikolova's Early Neolithic III, i.e. the Karanovo I–II and the Starčevo–Criş III horizon that can be assigned to between 5700–5450 calBC.[14] The new radiocarbon dates put the beginning of the Karanovo III phase at 5450, corresponding to the beginning of Vinča A.[15]

[9] For the calibration of the radiocarbon dates given in BP, I used the method of *Stuiver–Reimer* (1993) (CALIB 4 program). *Mantu* (1998) 159.

[10] *Schier* (1996) 149; *Gläser* (1991) 60; *Gläser* (1996) 180–181.

[11] *Özdoğan* (1993) 185–186.

[12] *Aslanis* (1992a) Fig. 40.

[13] *Nikolov* (1999) 65.

[14] *Nikolova* (1998) 101.

[15] *Boyadziev* (1995) 162; *Görsdorf–Boyadziev* (1998).

The latest Starčevo period can be assigned to between 5470–5290 in the light of P. Breunig's calibrated dates, R. Gläser and E. Hertelendi's measurements and L. Thissen's chronology.[16] A. Whittle and D. Borić published similar dates.[17] St. Dimitrijević put the end of the Starčevo sequence at 5469 calBC.[18] Four dates, 5380, 5290, 5420 and 5350, have been published for the eponymous site, and the dates for Gornja Tuzla (5490), Obre I (5420) and Veluška Tumba (5490) mark the final phase of the culture.[19] A date of 5400 is available for Vörs–Máriaasszonysziget, one of the northwesternmost Starčevo sites.[20] This date again confirms the conclusions drawn from the find assemblage, namely that the Pityerdomb settlement is co-eval with the late Starčevo villages in the area.

The above radiocarbon dates provide additional proof that the latest phase of the Körös culture, the "Protovinča" phase, overlapped with the early Alföld Linear Pottery and that the late (Spiraloid B) phase of the Starčevo culture overlapped with the early or formative Transdanubian Linear Pottery phase. This period lasted for some 120 years in Transdanubia, although it may have been as long as 200 years in some micro-regions. Obviously, one cannot rely solely on radiocarbon dates, but in view of the convergence with the similar conclusions drawn from the analysis of the different categories of evidence in every chapter of this study, the above receive additional support.

The comparison of the radiocarbon dates for the early Linear Pottery phase in Central Europe with the ones from western Transdanubia is also very instructive. Accepting M. Zvelebil's assumption[21] that neolithization was a long process, shaped by the needs of the local population and the immigrants' rate of advance, we may assume an even more protracted period in western Transdanubia, the region where the Linear Pottery evolved. In other words, the transition in Transdanubia was slower than the one in Thessaly or the Balkans.

The radiocarbon dates for the early Linear Pottery settlements in Lower Austria seem astonishingly early at first glance (and even at a second one!). In 1996, E. Lenneis, P. Stadler and H. Windl published an overview of the available dates, including the ten new dates for the Rosenburg site. The earliest date was 5600, the other dates fell between 5420 and 5210.[22] The oldest date for Trench II of the Brunn–Gebirge/Wolfholz site, the earliest section of the settlement, was 5620 BC,[23] although an even earlier date, 5800 was gained by I. Headley for the sample taken from the plastering of a hearth.[24] This can be regarded as too early and it is not confirmed by any other radiocarbon date from a bone or charcoal sample. The most probable date for the beginning of the settlement, accepted also by A. Whittle, is 5620.[25] In the above quoted 1996 study, the Rosenburg–Strögen–Brunn II horizon was dated between 5450–5140 and was correlated with Tichý's phase I, the early Linear Pottery horizon in Central Europe.[26] In her recently published monograph E. Lenneis suggested a date between 5450–5000 for Neckenmarkt, a settlement surviving into the late Linear Pottery phase, and a date between 5500 and 5350 for Strögen, occupied during the early Linear Pottery phase.[27] The above would suggest a date around 5600 or slightly later for the early Linear Pottery settlements of Austria and Germany. E. Ruttkay puts the beginning of these sites at 5400,[28] J. Lüning at 5700, while H. Stäuble quotes a date around 5500 for the early Linear Pottery settlements, i.e. the commencement of the Early Neolithic in these regions.[29]

[16] *Breunig* (1987); *Horváth–Hertelendi* (1994); *Gläser* (1991); *idem* (1994); *Thissen* (2000b); *idem* (2000c).
[17] *Whittle et al.* (2002).
[18] *Gläser* (1994) 480.
[19] *Gläser* (1991) 59.
[20] *Kalicz–T. Biró–M. Virág* (2002) 26.
[21] *Zvelebil* (1986): 167; *idem* (2001) 6.
[22] *Lenneis–Stadler–Windl* (1996) 103–104.
[23] *Stadler* (1995); *idem* (online); *idem* (1999).
[24] *Stadler* (1999).
[25] *Whittle et al.* (2002).
[26] *Lenneis–Stadler–Windl* (1996) 104.
[27] *Lenneis* (2001 [2002]) 187–190.
[28] *Ruttkay* (1983) 51.

R. Gläser assigned the early phase at Eilsleben to between 5440 and 5070, even though his chart contains earlier dates for both Eilsleben and Eitzum (he attributes these to calibration errors).[30] It is therefore surprising, to say the least, that the dates from Mohelnice are slightly later since in view of that site's more southerly location they should be earlier. The six dates for Mohelnice fall between 5520 and 5320, with two dates of 5460 and 5480 inbetween. The same phenomenon can be observed here as in the case of Pityerdomb. If neolithization is conceptualized as the "wave of advance" suggested by A. Ammermann and L. Cavalli-Sforza,[31] there is a grave contradiction between the relatively late dates in the southeastern region and the rather early ones in the northwestern region.

Two explanations can be invoked for resolving this problem. One is mechanical, in the sense that individual laboratories use different techniques and that some are more reliable than others – an issue that inadvertly crops up during informal discussions with colleagues. The other seems more acceptable to me. In the chapters discussing early architecture, a boundary west-northwest of the Morava–Danube confluence was outlined, reflected in the divergent development of that region, ultimately leading to the emergence of the Linear Pottery longhouses of Central Europe. This harmonizes with R. Tringham's observation that the Mesolithic population played a more active role in neolithization northwest of this boundary.[32] It is therefore possible that the Neolithic transformation happened differently on the northern fringes of the Starčevo culture, in the Balaton region and to its north and west, in the Raba–Danube Valley and the southwestern Slovakian–Lower Austrian plain, where it was a mosaic-like, protracted process. It is possible that some groups already founded settlements north of the Danube, when other, remote and less accessible areas were still controlled by hunter-gatherer groups who perhaps maintained contact with the Neolithic villages, but had themselves not adopted a sedentary life-style. (This shall be discussed at greater length in the next chapters.) Similarly, it is possible that a settlement like Pityerdomb with a "use-life" of four or five generations, was still occupied at the time when other early Linear Pottery groups had already migrated to areas far to north. The apparent oddity of the radiocarbon data does not necessarily reflect some sort of contradiction. The series of radiocarbon dates should be viewed as complementary evidence for modelling the process of neolithization in Transdanubia.

[29] *Lüning* (1988b); *Stäuble* (1994); *idem* (1995).
[30] *Gläser* (1991) 55–56.
[31] *Ammermann–Cavalli-Sforza* (1973); *eadem* (1984).
[32] *Tringham* (2000) 24–25. The map on p. 24 shows the areas lying above 500 m, outlining the 'corridor' to the Drava–Sava Valley and Transdanubia.

Chapter 8

SUBSISTENCE AND CONTACTS

The settlement at Pityerdomb was made up of two contemporary houses and their yards with the activity pits and the workshops. The distance between the two houses suggests that the area between them was covered with trees or that the animal pens perhaps lay there (unfortunately, there is no evidence for either). Almost nothing can be said about the type of animals consumed by the settlement's occupants, or about the proportion of domestic and wild animals in the diet. The fact that animals were kept is indicated by the animal figurine with pierced nose and an observation made during the excavation, namely that the remains of animal bones could often be detected in the fill of the excavated pits. These remains represented broken bones: the animal species could not be determined from the *in situ* form of the bone and neither could any of the bones be examined owing to their poor state of preservation – they disintegrated as soon as they were touched.

The palaeoenvironmental data indicate that the Mura and Kerka region had a warm and wet climate of the sub-Mediterranean type at the onset of the Neolithic. The area was covered with dense woodland of mixed oak and pine forests during 7500–4500 calBC.[1] The wood remains from the Pityerdomb settlement came predominantly from oak, although beech was also identified, the latter also an important indication of a wetter climate. Several soil and pollen samples were taken from this area;[2] unfortunately, no useful results were obtained from the samples taken from the marshland floodplain of the Szentgyörgy Stream flowing by the Pityerdomb site since the pollen grains were destroyed or washed out owing to erosion and the recurring floods. Similarly to the pollen diagrams from western Hungary, the pollen sequences for the Prekmurje region and eastern Styria, compiled as part of a project co-ordinated by the Vienna University, did not contain any data on the vegetation in the 6th Millennium.[3] The samples taken from the Szentgyörgy Stream yielded one single piece of information: traces of burning could be identified in the period preceding the life of the Pityerdomb settlement (Szgyv, sample 1, 2.70–3.00 m).[4] The date for the organic material in the sample was 8771 ± 54 BP (7936–7821 calBC; deb-5018).

The earliest piece of information on the Mesolithic comes from the Pupičina Cave in northwestern Croatia.[5] The layer sequence beginning in 5679 calBC yielded domesticated caprinae bones (sheep and goat).[6] However, it seems unlikely that the finds and the information from this site, predating the Pityerdomb settlement by some 120 years, has any relevance for the Kerka Valley since it is generally agreed that the neolithization of this region can be linked to the Early Neolithic of the Adriatic, the Trieste karst region and northern Italy.[7]

The evidence for intentional forest burning indicated by the sample from the floodplain of the Szentgyörgy Stream is more important, especially in view of the fact that comparable data can also be quoted from other areas in this region. It would appear that several hundred years before the

[1] *Andrić* (2001) 151.
[2] *Cserny–Nagy-Bodor* (1999); *eadem* (in press).
[3] *Culiberg* (1999); *Draxler* (1999).
[4] *Cserny–Nagy-Bodor* (1999); *eadem* (in press).
[5] *Andrić* (2001) 135.
[6] *Miracle* (1997).
[7] *Budja* (1993); *idem* (1994); *idem* (1996); *idem* (1999); *Biagi* (2001); *Biagi–Voytek* (1994); *Biagi–Starnini* (1999); *Biagi–Starnini–Voytek* (1993); *Küster* (1994); *Baroni et al.* (1990); *Montagnari-Kokelj* (1993).

Fig. 155. a-d. Macrobotanical finds from Pityerdomb

establishment of the Pityerdomb settlement, the then inhabitants of the area had tried to create sunlit clearings with forest burning. The evidence for the sudden expansion of hazel in the region is in line with the information from this sample.[8] It seems likely that western Transdanubia was a refugium for hazel during the last glaciation and that the species spread eastward in consequence of the gradually warming climate.[9] However, the closed forests did not favour the growth of hazel and thus the abrupt increase of the species can hardly be explained by the fact that it was native to the region. Knowing that hazel thrives on the edge of forest clearings, its sudden expansion during the period preceding the Neolithic is especially striking.[10] M. Andrić's investigations have revealed that forest burning was practiced southwest of the Kerka Valley around 6900 and 6200 calBC.[11]

The available evidence does not indicate any continuity between the communities who practiced forest burning and the occupants of the Pityerdomb settlement. The analysis of the architectural remains and the pottery revealed the occupants' strong ties with the southeastern and central regions of the Balkans. Still, we cannot entirely reject the possibility that non-sedentary indigenous groups, who encouraged the growth of hazel or perhaps even cultivated this species, too played a role in the establishment of the settlement, as will be shown in the next chapter.

[8] *Zólyomi* (1980); *Bodor* (1987); *Juhász* (2002).
[9] *Juhász* (2002).
[10] *Zólyomi* (1980); *Járai-Komlódi* (1987) 39–43.
[11] *Andrić* (2001) 163.

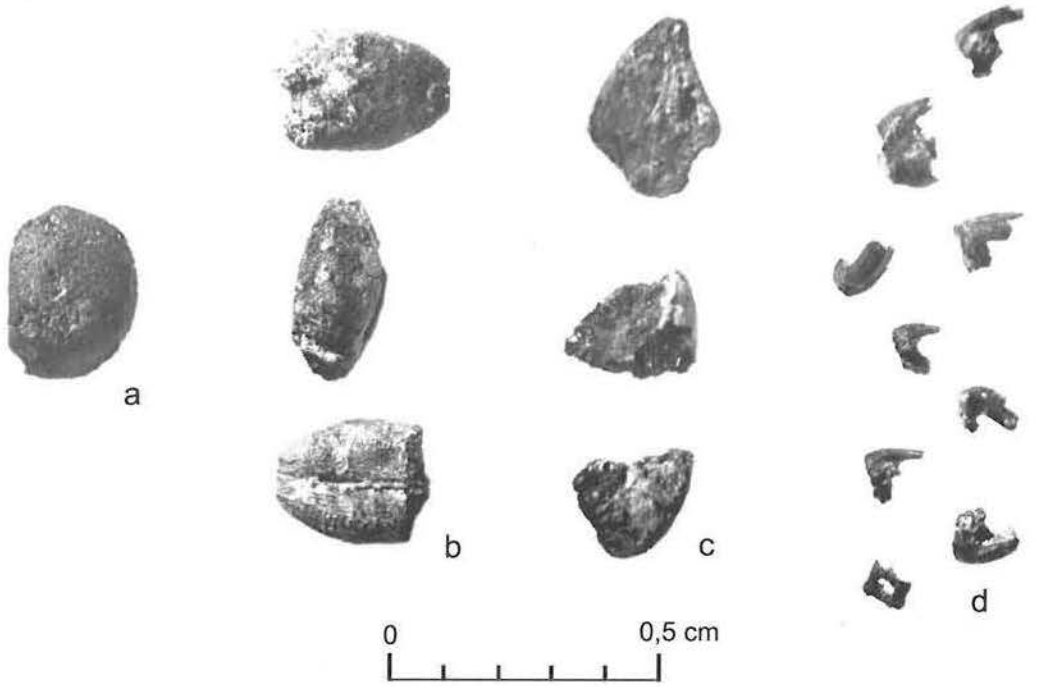


Fig. 156. a-d. Macrobotanical finds from Pityerdomb

In spite of the scanty evidence for subsistence and contacts, a few conclusions can be drawn from the analysis of the macrobotanical samples, as well as from the raw material and typological traits of the lithic finds.

The archaeobotanical analyses were in part conducted on the site, following the survey of the current vegetation, and in part by flotating the samples under laboratory conditions. In many cases, dry sieving proved more fruitful owing to the aggressive clayey soil. The analyses were conducted by B. Berzsényi and O. Dálnoki.[12]

The archaeobotanical finds were dominated by cereal grains and threshing refuse *(Figs 155–156).* Three different wheat species could be identified: einkorn, spelt and common wheat were all cultivated at Pityerdomb. Barley and oat remains were also recovered, although in a minimal quantity. In the case of oat, it is also possible that it was a wild species. The botanical remains included a pea fragment, recovered from the fill of Feature 27 (60–65 cm, from an undisturbed layer) and thus its secure context is indubitable. The number of grains, however, is rather low, in spite of the relatively wide range of cultivated species.

The threshing refuse suggests that wheat was threshed in the open areas around the houses, probably in the yard. The charred grains may indicate parching according to the archaeobotanists examining the finds, although it is equally possible that the grains were charred when the house burned down.

In addition to cereal remains, two weed species, hogweed and goosefoot remains were identified. Their presence provides indirect proof for cultivation since these species grow best in disturbed soils, such as cultivated fields. The latter could be ground into flour and used to supplement the diet.

In view of the environment of the site, the extent of the one-time loessy area, the small size of the settlement, the heavily forested area, the wet climate and the narrow ribbon of sedimentary soil

[12] *Berzsényi–Dálnoki* (in press).

along the stream, it is hardly surprising that the burnt houses did not yield higher amounts of cereal grains. The agriculture of this settlement can perhaps best be visualized as the cultivation of cereals in the area between and around the houses, and in the narrow strip along the stream. The forest enclosing the settlement hardly allowed any other alternative. Instead of extensive wheat fields, we should rather assume a variant of horticulture, a practice documented for the late Mesolithic. This variant differed from its Mesolithic forerunner qualitatively since it also involved the cultivation of cereal species that were previously unknown and had obviously been brought here by Balkanic immigrants, who also transmitted the cultivation techniques. At the same time, this type of cultivation did not bring a quantitative change. Cultivation only became more intensive during the developed Linear Pottery phase, when the Linear Pottery communities moved to the higher lying, more fertile loessy areas, and in the later Szakálhát–early Tisza and Sopot–Lengyel periods.

The evidence for animal husbandry and hunting, as mentioned above, were not preserved. The wet, sub-Alpine climate meant that even though the winters were not as cold as in more easterly regions, heavy snowfalls accounted for a part of the annual precipitation. The winters in the Pityerdomb area probably meant a deep snow cover lasting for long months at a time. Smaller animals, such as sheep and goat kept in the open, could easily catch a chill and not live to see the spring.[13] This fact again supports the oft-voiced assumption that domestication in Central Europe was predominantly based on the local domestication of aurochs, rather than on raising sheep and goat.[14] E. Puchner's recent study on the animal bone samples from a number of early Linear Pottery settlements in Central Europe yielded interesting results. His analyses indicate that with the exception of two sites, Strögen in Austria and Schwanfeld in Germany, the percentage of cattle was identical to that of goat and sheep and that in some cases cattle exceeded by far the former.[15] The rich and varied animal bone sample from the settlement at Bylany in Bohemia indicated that the consumption of cattle was as high as 80 per cent.[16] It has also been suggested that cattle was castrated already in the Early Neolithic in order to use the species as draught animals.[17] The cattle figurine, a quintessential symbol of the Pityerdomb settlement, may in fact have been the depiction of an ox, a possibility borne out by the evidence on subsistence patterns.

Even though the find assemblages from southern Transdanubia and the areas south of the Drava are dominated by Starčevo traditions, and the cultural traditions of the occupants of the Pityerdomb settlement too can be traced to the Central Balkans in many respects (pottery, cereal cultivation), and the animal husbandry practiced at the settlement was probably based on the Central European tradition of cattle breeding, rather than on Balkanic species. The ox figurine is probably a reflection of the dominance of cattle. If this was indeed the case, the shift was more likely caused by climatic and environmental, rather than cultural factors.

Numbering almost a thousand pieces, the chipped stone implements from the settlement form an impressive assemblage *(Fig. 157)*. The lithic finds were analyzed by K. T. Biró; a detailed description of the finds will be published in the volume describing the Kerka Valley Micro-Region Project.[18] The raw material used for the manufacture of stone tools was almost exclusively procured from the Szentgál mine in the Bakony Mountains, lying some 180–190 km from the Pityerdomb settlement. The raw material was transported to Pityerdomb in a semi-worked condition, in the form of cores. It would appear that each house had its own workshop. Feature 17, lying by the

[13] I would here like to thank Pál Sümegi for pointing this out to me.

[14] *Zvelebil* (1986); *Gronenborn* (1999).

[15] *Pucher* (2001 [2002]) 265–270 and the table on p. 267.

[16] *Soudsky–Pavlů* (1972) 323–324.

[17] *Lüning* (2000) 11–12.

[18] *Biró* (in press). The preliminary results have already appeared in smaller articles: *T. Biró* (2001a); *idem* (2002a) and Biró, personal communication.

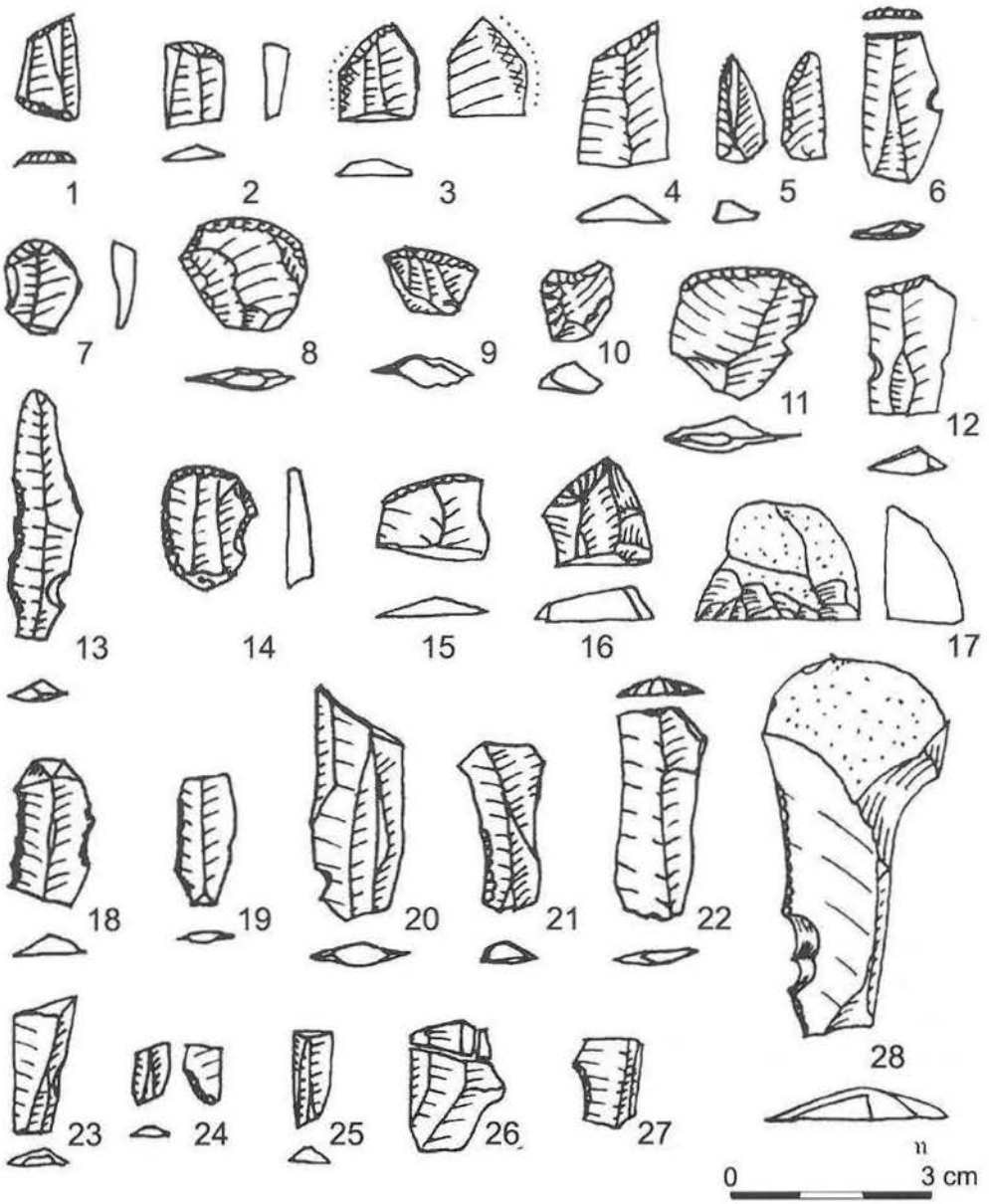


Fig. 157. Lithic finds from Pityerdomb (after T. Biró 2001a. Fig. 2)

southwestern wall of House II, was probably a stone workshop, an interpretation supported by the series of small holes, the imprints left by a small bench or stool, the high amount of charcoal and, most importantly, the high number stone implements, tiny chips and flakes. The stone implements represent the microlithic tradition; most were flakes and micro-scrapers.[19]

The closest parallel to the chipped stone assemblage from Pityerdomb can be quoted from the late Starčevo settlement at Gellénháza–Városrét, lying at a distance of roughly 45 km. The lithic sample from this site contained about three thousand stone implements; however, only about one-half of the finds date from the Early Neolithic since the site was also occupied in the later Linear Pottery period.[20] The roughly one thousand pieces examined to date indicated that the same raw material was used as at Pityerdomb and that the lithic types too were more or less

[19] *T. Biró* (2001a) 90.

[20] *T. Biró* (2001a) 90; *T. Biró–H. Simon* (2003).

identical. The same holds true for the stone finds from Zalaegerszeg–Andráshida–Gébárti-tó and Vörs–Máriaasszonysziget. The lithic assemblage from the latter site was not as rich as the ones from the other sites, but it resembled them in that the raw material of the 126 tools and their fragments originated from the Szentgál mine.[21] The assemblage is dominated by microliths, with a few pieces representing the bipolar technique of the Mesolithic.[22] In contrast to the lithic assemblages from Pityerdomb and Gellénháza, the finds from Vörs included several larger tools – in this respect the Vörs finds can be likened to the stone tools from the Mencshely–Vöröstó site in the Vázsony Basin.[23]

A comparison of the pottery, the lithic finds and the settlement layout of the Pityerdomb site with other nearby sites indicates that the inhabitants of the region were familiar with the Kerka Valley and preferred to settle on the low terraces above rivers. It seems that they maintained lively contact with the occupants of more distant settlements. The settlements at Pityerdomb, Szentgyörgyvölgy–Haraszti-erdő, Kerkafalva–Agyag and Kerkabarabás, and the slightly more distant settlements at Gellénháza and Zalaegerszeg–Andráshida–Gébárti-tó were all established in similar environments; their pottery shares many common features and the raw material for their stone tools was procured from Szentgál. In contrast to these settlements, Vörs does not lie along the shortest route linking the Kerka Valley with the Bakony Mountains, but on a marshland islet. Its pottery differs slightly and the stone tools from the site also included other types, even though they too were made from Szentgál radiolarite. The contacts with the neighbouring settlements, reflected also in the archaeological finds, reveal much about the lifeways of Pityerdomb's occupants. It would seem that there was continuous movement between these small settlements, occupied for a few generations, and that close contacts were maintained with other nearby settlements.

The issue of regional contacts poses a number of questions. The first of these is how the occupants of these settlements knew about the Szentgál mine, lying some 200 km away from this area. The next question is why this population preferred a rock from a distant source, even though good quality raw material was available locally from the alluvial deposits of the western Transdanubian streams and the nearby hills of the Balaton Uplands. The third is perhaps even more perplexing: why did the occupants of the late Starčevo and the contemporary transitional settlements base their economy on a raw material whose source lay well beyond the area they controlled (or, to use an archaeological term, beyond the culture's distribution). How did they learn of the Szentgál mine, why was the rock mined there so important and so valuable, and, most important, who were the groups who procured and transported the red rock to a distance of 200 km?

These questions point well beyond the analysis of the lifeways and subsistence of a single settlement. However, we can hardly hope for a better understanding of the Early Neolithic in Transdanubia and of the Pityerdomb settlement itself without an examination and discussion of these issues. The next chapter is devoted to an overview and interpretation of the available evidence in order to answer these questions.

[21] *T. Biró* (1998) 165.
[22] *T. Biró* (1998) 165.
[23] *T. Biró* (1998) 165–166.

Chapter 9

SETTLEMENT PATTERNS AND REGIONAL CONTACTS DURING THE TRANSITION TO THE NEOLITHIC IN TRANSDANUBIA

Sites *(Fig. 159)*

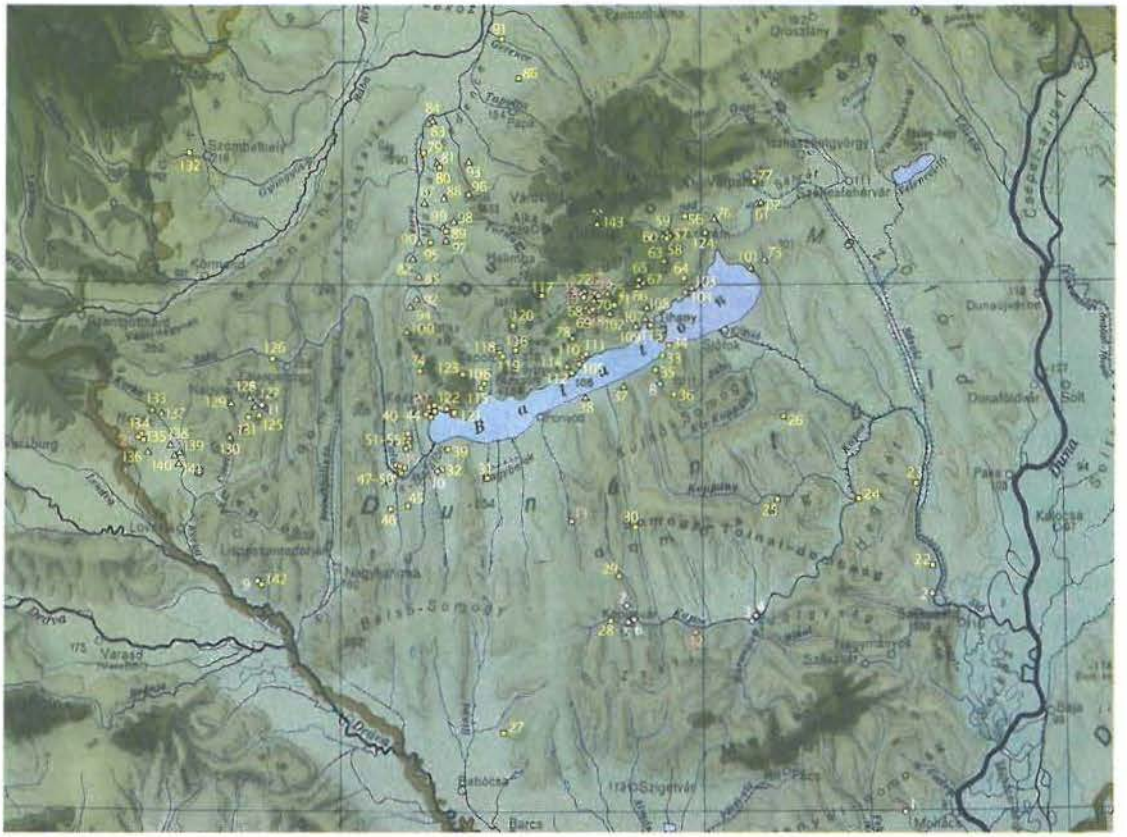


Fig. 159. Mesolithic, Starčevo, early and classical Linear Pottery Sites in western Transdanubia

Late Starčevo (Spiraloid B) sites in Transdanubia *(Fig. 160)*

1. Babarc (Bánffy [2000], [2001])
2. Harc–Nyanyapuszta (Kalicz [1990])
3. Dombovár–Kapospart (Kalicz [1990])
4. Dombovár–Gunaras (Sági–Törőcsik [1991])
5. Kaposvár–Deseda (Kalicz [1990])
6. Kaposvár–Kisgáti-dűlő (Sági–Törőcsik [1991])
7. Kaposfüred (Sági–Törőcsik [1991])
8. Szólád (Sági–Törőcsik [1991])
9. Becsehely I (Kalicz [1990])
10. Vörs–Máriaasszonysziget (Kalicz–M. Virág–T. Biró [1998])
11. Gellénháza–Városrét (H. Simon [1994]; H. Simon [1996])

Fig. 160. Starčevo sites in western Transdanubia

The Transdanubian distribution of the Starčevo culture is rather sparse[1] compared to the settlement network south of the Drava.[2] The low number of known sites is especially striking compared to the record for the region south of the Drava, where over sixty Starčevo sites have been identified to date. Very few of these date to the early Starčevo phase: most can be assigned to the classical or late, Spiraloid B phase.[3] In Transdanubia, however, few of the currently known sites date to the late, Spiraloid B phase, even though a number of new sites have been identified in recent years. Several new Starčevo sites dating to the late phase of the culture were identified during the intensive field surveys conducted in the Kapos Valley and the rescue excavations preceding the motorway constructions.[4] This new evidence suggests that the settlement network was apparently denser in other areas of the Starčevo distribution too than the archaeological record would indicate. The known sites show a rather sparse distribution compared the extent of the distribution territory. It is noteworthy that late Starčevo sites can be found along the entire width of southern Transdanubia and that three of the currently known seven sites lie on the northern and western boundary of the distribution, modifying the earlier boundary. The Pityerdomb settlement lies some 50 km to the west of this boundary, a fact that is especially remarkable in view of the one-time environment, the climatic conditions and, also, the initial possibilities for cereal cultivation and animal husbandry.

[1] *Kalicz* (1990): 39; *Kalicz–M. Virág–T. Biró* (1998).

[2] *Minichreiter* (1997a) 9.

[3] *Minichreiter* (2001) 222.

[4] I personally examined the finds collected during the field surveys conducted in the late 1980s and early 1990s, currently stored in the closed-down storehouse of the municipal museum in Tapolca. I only accepted the Starčevo dating of sites whose finds I had personally examined. *Sági–Törőcsik* (1991).

These sites all lie on fine-grained loamy, sandy or loessy sediment soils of the river valleys, except for a single site in the Little Balaton area: the settlement at Vörs was established on an originally loessy, but later gradually waterlogged island rising above the peaty marshland.[5] The pollen profiles indicate that this region was heavily forested.[6] Settlement in this area was no doubt preceded by a certain extent of forest clearing. The water level of Lake Balaton was probably somewhat higher during the late Starčevo period in the mid-6th Millennium BC and its shore was lined by marshland owing to the lake's heavy eutrophication.[7]

Probable Mesolithic sites *(Fig. 161)*

12. Kaposhomok (Pusztai [1957]; T. Dobosi [1972])
13. Pamuk (Pusztai [1957]; T. Dobosi [1972])*
14. Vöröstó (Mészáros [1948]; T. Dobosi [1972]; T. Biró [1991])
15. Nagyvázsony–Csapás (Mészáros [1948]; T. Biró [1991])
16. Nagyvázsony–Egervíz mente (Mészáros [1948]; T. Biró [1991])
17. Ragonya (Mészáros [1948]; T. Biró [1991])
18. Mencshely (Mészáros [1948]; T. Biró [1991])
19. Zalavár (Juhász [2002])
20. Keszthely–Gyöngyös Stream (MRT 1, site 21/1)
21 Szentgyörgyvölgy–Pityerdomb, stream-shore (Cserny [1999])

Together with various other stray lithic finds, the Mesolithic date of the microliths collected during field surveys in the Kaposhomok area seems probable.[8] B. Draveczky mentions a few additional Mesolithic assemblages from the Kapos Valley.[9] Interestingly enough, most of the currently known late Starčevo sites too lie in the Kapos Valley (Dombóvár–Kapospart, Dombovár–Gunaras, Kaposvár–Deseda, Kaposvár–Kisgáti-dűlő, Kaposfüred, Szólád).

The other important micro-region yielding Mesolithic surface finds, where many Linear Pottery sites have also been identified, is the Vázsony Basin, lying between the Balaton Uplands and the southern Bakony Mountains. The lithics and the pottery finds from this area (Vöröstó, Mencshely, Csepely, Ragonya, Nagyvázsony) have been described by Gy. Mészáros.[10] The lithic finds were examined by Katalin T. Biró, who concluded that most of the stray finds in the collection of the Laczkó Dezső Museum in Veszprém did not necessarily date from the late Mesolithic, but could equally well be assigned to the Linear Pottery culture.[11] In her 1991 study she also described the large lithic find material brought to light from a Linear Pottery site investigated during a rescue excavation. One interesting feature of the Mencshely–Murvagödrök site was, that the pottery from the settlement could be assigned to the later Keszthely phase, rather than the early Linear Pottery culture.[12] However, it is quite obvious from Gy. Mészáros' study and the description of site 32/4 in the *MRT 2* volume that early Linear Pottery finds were also collected at this site. Another interesting phenomenon is that while a number of early Linear Pottery sites appear on Gy. Mészáros' map of

[5] *Pécsi* (1981) 70, 80.

[6] *Medzihradszky–Járai-Komlódi* (1996); *Nagy-Bodor–Cserny* (1998); *Medzihradszky* (2001); *Juhász* (2002).

[7] *Bodor* (1987); *Nagy-Bodor–Cserny* (1997); *Nagy-Bodor–Járai-Komlódi* (1999).

* It has recently been demonstrated that a part of the surface finds from Pamuk was gunflint and that the Mesolithic dating of the remaining lithic finds can also be challenged. Cp. *Marton* (2003).

[8] *Pusztai* (1957); *T. Dobosi* (1972).

[9] *Draveczky* (1970) 4.

[10] *Mészáros* (1948).

[11] *T. Biró* (1991) 51–52.

[12] *Regenye* (1991).

Fig. 161. Mesolithic sites in western Transdanubia

the archaeological sites in the Vázsony Basin (four early Linear Pottery settlements are listed in the Vöröstó area alone), more recent investigations in this area and Judit Regenye's excavations confirmed only the presence of the later Linear Pottery culture.[13]

I included the lithic finds from the Vázsony area in the list for the following reasons: in terms of their typological traits, the microliths in question are undoubtedly Mesolithic in nature – a point confirmed by all specialists who examined these assemblages. This allows two possible interpretations. Either the lithics were manufactured by the indigenous hunter communities inhabiting the Bakony Mountains and the Balaton Uplands, and the pottery finds from the region date from a later period; or the Mesolithic type lithics and the Linear Pottery sites were contemporary, suggesting that the Neolithic farmers adopted this lithic technology from local hunter-gatherer groups. In the latter case too, we must assume the presence of an indigenous, late Mesolithic population, who came into contact with the immigrant, food-producing farmers. Accepting the latter alternative, the very fact that the Linear Pottery communities learnt the manufacture of specialized tools for hunting and that they transmitted this knowledge to their descendants until the Keszthely phase of the culture is in itself an important piece of information. If this was indeed the case, the implication is that there was still need for a specialized tool-kit for hunting, and that in addition to cereal cultivation and animal husbandry, hunting (and most probably gathering) remained an important mode of food procurement not only during the initial Linear

[13] *Regenye* (1991); *Regenye* (2002).

Pottery phase (at least in the Vázsony Basin), but for a longer period of time.[14] It has been demonstrated that the lithic inventory of the Linear Pottery culture contained a much wider range of types than the later, less varied tool-kits – this being the justification for the introduction of a "pre-Linear Pottery stone horizon".[15]

Two pollen profiles also provide evidence for anthropogenic changes during the Mesolithic. I. Juhász noted a change in the dense oak and beech forests from 6500 BP (5500 calBC), indicated by the increase of pollen from grass species and the rise in linden and hazelnut pollen. The opening of closed forests, the spread of warmth-loving hazelnut and various grass species can probably be attributed to the human manipulation of the environment, to forest clearing.[16] Earlier, M. Füzes had also noted that 55 per cent of the ligneous plants at the close of the Boreal was hazel.[17] The pollen profile from Keszthely–Úsztató-major indicated a similar tendency: the ratio of hazelnut was high until 5600 calBC and declined afterwards. The pollen diagrams also reveal that this species played no role in the vegetation until the onset of the Boreal, when it began to spread.[18] It seems likely that western Transdanubia was a hazel refugium during the Ice Age, whence it spread eastwards when warming began;[19] however, the closed forests did not provide a particularly favourable environment for this thermophilic species and its sudden expansion can therefore hardly be attributed to the fact that it was originally native to this region. Hazelnut tends to thrive on the edge of forest clearings – this is why its sudden spread during the period preceding the Neolithic is so striking.[20] Interestingly enough, the rise in the number of cereal pollens coincided with the decline of hazel pollen.[21] The dates for these pollen profiles indicate that hazel attained its highest proportion in the period directly preceding the appearance of the Starčevo culture.

The other pollen diagram was compiled by T. Cserny and his colleagues from the data collected from the western part of Zala county. One of the samples, taken from the marshy bank of the Szentgyörgy Stream flowing near the Pityerdomb settlement, showed an increase of organic matter originating from burning (Szgyv, sample 1, 2.70–3.00 m).[22] The age of the organic material was determined as 8771 ± 54 BP (7936–7821 calBC) (deb-5018). According to P. Sümegi, who collected the samples, this could not have been natural charcoal. The traces of burning could only be attributed to human activity.[23] The techniques and frequency of pre-Neolithic forest burning have been discussed by M. Zvelebil, together with the desired and actual effects of this practice. His table indicates that the more often burning was performed, the more limited the erosion caused by it and the thinner the layer of charcoal. The sample taken from the marshy floodplain of the Szentgyörgy Stream suggested forest clearing performed every 8–12 or 15–30 years.[24] It is also obvious that small-scale forest clearance served a variety of purposes: the most probable among these is the creation of hunting paths or of paths leading to watering places used by wild animals (and thereby make hunting easier). It is equally possible that the one-time hunters cleared the forest in order to create a campsite or to encourage the growth of hazel or some other useful plant species by the Szentgyörgy Stream.

[14] I first presented this idea in May, 2000, at a conference on neolithization held in Ljubljana. The participants of the conference, including A. Gopher, M. Zvelebil and L. Thissen, mentioned similar phenomena from the Early Neolithic in other regions. The paper was published in vol. 27 of *Documenta Praehistorica*. *Bánffy* (2000a).

[15] *T. Biró* (2001) 91.

[16] *Juhász* (2002).

[17] *Füzes* (1989) 143.

[18] *Zólyomi* (1980); *Bodor* (1987).

[19] *Juhász* (2002).

[20] *Zólyomi* (1980); *Járai-Komlódi* (1987) 39–43.

[21] *Medzihradszky* (2001) 9, Fig. 2.

[22] *Cserny–Nagy-Bodor* (1999); *eadem* (in press).

[23] Since this point was not clear from the text, I turned to the author for information. I would here like to thank Pál Sümegi for clarifying this issue to me.

[24] *Zvelebil* (1994) 61.

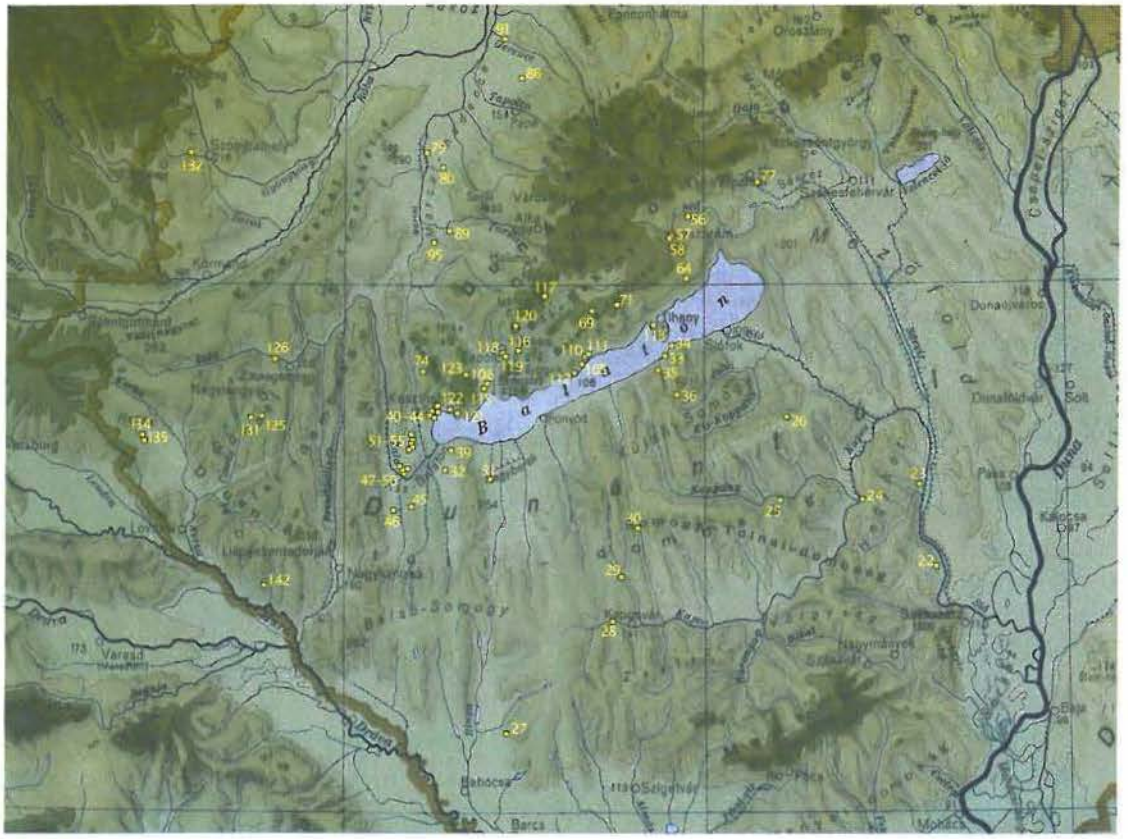


Fig. 162. Early Linear Pottery sites in western Transdanubia

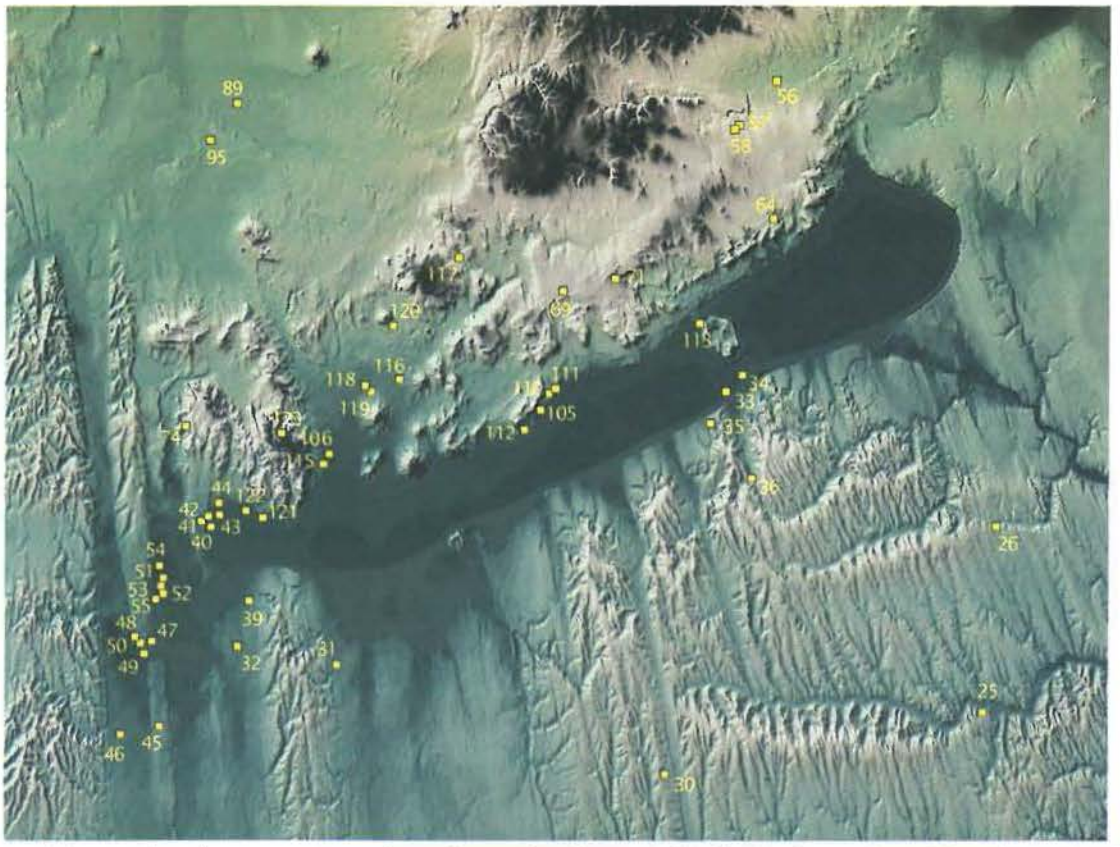


Fig. 163. Early Linear Pottery sites along the shores of Lake Balaton (satellite photograph)

Finally, I found an interesting piece of information in Volume 1 of the Archaeological Topography of Veszprém County (*MRT 1*) that would easily have escaped attention, had there not been a recent increase of similar finds. The site in question is site 1 near Keszthely, lying in the waterlogged area of the former Héviz Bay of Lake Balaton, where "a coracle was found in the 1950s in line with the Gyöngyösi Inn during the dredging of the Gyöngyös Stream; the coracle itself perished."[25] According to the archaeologists conducting the field survey, the boat was probably Neolithic since the encroachment of bogland in the bay could hardly have occurred later than the Neolithic. Recent hydrological investigations by E. N. Bodor and T. Cserny, however, have revealed that the Keszthely Bay was dry land until about 10,000 BP (9500 calBC) and that only at the beginning of the Boreal was it again covered with water.[26] The Boreal and the Atlantic can be divided into an initial wetter and later drier period.[27] Owing to the extensive precipitation at the beginning of the period, the bay was again filled up with water and then gradually dried up again. The thinning of the sedge-marshland is attributed to the temperature rise during the late Mesolithic. The Keszthely Basin was again covered with water at the beginning of the Neolithic, with the western part of the bay resembling more the marshland of the Little Balaton region.[28] The bed of the Gyöngyös Stream could not be identified, probably because it had changed during the millennia, suggesting that it had not played a major role in the formation of the lake. The boat was probably described as a coracle because it resembled the dug-out boats with a wide, flat bottom used until the 19th century on Lake Balaton.[29] Unfortunately, the wood also perished and thus neither a radiocarbon, nor a dendrochronological date could be obtained from its remains. At the time when the lake's present shoreline developed with the merging of the smaller basins, the area in which the Keszthely site lies was not part of Lake Balaton since it had turned into a bogland.[30] The boat itself was probably used at a time when the area was still covered with water. The hydrological analyses mentioned above indicate that the encroachment of the bogland in the Hévíz Bay area had already started in the early 6th Millennium BC, suggesting that the boat can be dated to the period preceding the Transdanubian Neolithic.

In contrast to the Jászság area, where the Mesolithic is amply documented through finds brought to light from excavations,[31] there is little information on the Transdanubian Mesolithic. Taken together, the above data provide *direct* evidence for the presence of hunter-gatherer groups, even if some can be separately challenged. It is exactly because the *direct* evidence is inconclusive that I consider the *indirect* evidence for a Mesolithic population in Transdanubia even more important.

Sites of the early and classical (Keszthely) phase of the Transdanubian Linear Pottery in western Transdanubia *(Figs 162-164)*

22. *Medina-Margitsziget*[32] (*Kalicz–Makkay* [1972a])
23. *Úzd* (*Gläser* [1994])
24. *Szárazd* (*Gläser* [1994])
25. *Nagykónyi* (*Gläser* [1994])

[25] *Bakay–Sági–Kalicz* (1966) 76.
[26] *Nagy-Bodor–Cserny* (1997).
[27] *Nagy-Bodor–Cserny* (1997) 99.
[28] *Nagy-Bodor–Cserny* (1997) 100.
[29] The drawing of a similar wide, flat bottomed boat has been published in Vol. 1 of *Magyar néprajzi lexikon*. *Ortutay* (1981) 527.
[30] *Cserny* (1987) 75.
[31] *Kertész et al.* (1994); *Kertész* (1996).
[32] Sites in italics indicate the early Linear Pottery settlements.

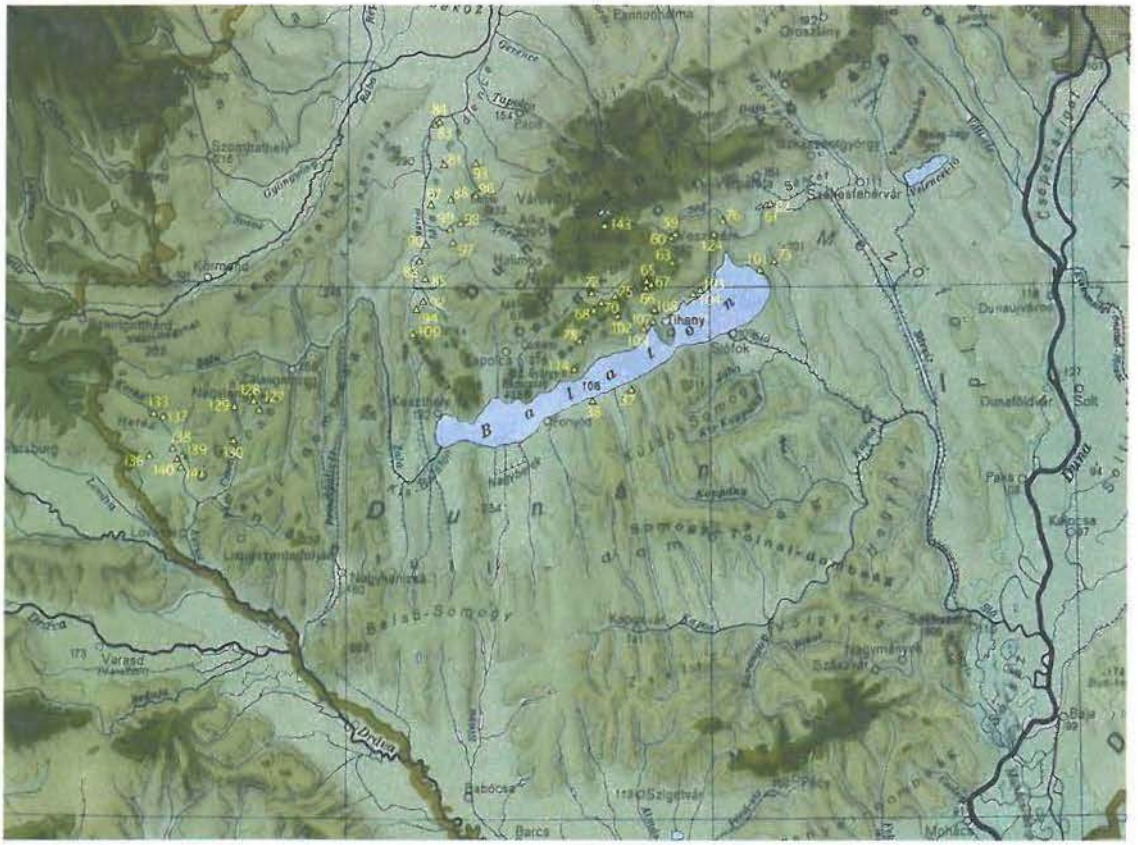


Fig. 164. Sites of the classical Keszthely phase of the Linear Pottery in western Transdanubia

26. *Magyarkeszi* (*Gläser* [1994])
27. *Görgeteg* (*Kalicz* [1988])
28. *Kaposújlak-Várdomb* (*Sági–Törőcsik* [1989])
29. *Magyaregres* (*Sági–Törőcsik* [1989])
30. *Mernyeszentmiklós* (*Kalicz* [1988]; *Sági–Törőcsik* [1989])
31. *Kéthely* (*Sági–Törőcsik* [1989])
32. *Vörs* (*M. Virág* [1996])
33. *Balatonföldvár* (*Sági–Törőcsik* [1989])
34. *Szántódpuszta–Rév* (*Sági–Törőcsik* [1991])
35. *Balatonszárszó–northern slope of the Almahegy* (*Sági–Törőcsik* [1991])
36. *Pusztaszemes* (*Sági–Törőcsik* [1991])
37. Balatonszemes–Bagódomb (V. Kiss' excavation, M7 project)
38. Balatonlelle (*Sági–Törőcsik* [1989])
39. *Balatonszentgyörgy* (*Sági–Törőcsik* [1989])
40. *Keszthely–Fenékpuszta* (*Gläser* [1994]; *M. Virág* [1996])
41. *Keszthely–Dobogó-Verébhegy* (MRT 1, site 21/6)
42. *Keszthely–Újdűlő* (MRT 1, site 13/60)
43. *Keszthely–Museum* (MRT 1, site 13/45)
44. *Keszthely–Méntelep* (MRT 1: 13/47)
45. *Balatonmagyaród-Hídvégpuszta* (*Gläser* [1994])
46. *Garabonc–Ófalu* (*Kalicz* [1988])
47. *Zalavár–Belterület* (MRT 1, site 59/4; *M. Virág* [1996])

48. *Zalavár–Szabó tanya* (MRT 1, site 59/6)
49. *Zalavár–Hosszúsziget* (MRT 1, site 59/17)
50. *Zalavár–Ürmöspuszta* (MRT 1, site 59/38)
51. *Sármellék–Lajosházi major* (MRT 1, site 40/6)
52. *Sármellék–Égenföld-Agyagbánya* (MRT 1, site 40/3; *Kalicz* [1978–79]; *Gläser* [1994]; *M. Virág* [1996])
53. *Sármellék–Belterület* (MRT 1, site 40/3)
54. *Sármellék–North* (MRT 1, site 40/12)
55. *Sármellék–South* (MRT 1, site 40/14)
56. *Kádárta* (*Torma* [1969])
57. *Veszprém–Ná(n)dortelep* (*Kalicz* [1988])
58. *Veszprém–Kórház* (*Torma* [1969])
59. Veszprém–Vashegy (MRT 2, site 51/1)
60. Veszprém–Somos II (MRT 2, site 51/69)
61. Ősi–Buhinvölgy II (MRT 2, site 36/11)
62. Ősi–Zsigmond-puszta (MRT 2, site 36/12)
63. Veszprémfajsz–Ányoskút (MRT 2, site 52/3)
64. *Felsőörs* (*Gläser* [1994])
65. Hidegkút–Vörösföldek (MRT 2, site 24/6)
66. Hidegkút–Középdűlő (MRT 2, site 24/7)
67. Hidegkút–Linzacker (MRT 2, site 24/8; *Torma* [1969])
68. Mencshely–Murvagödrök I (*Mészáros* [1948]; MRT 2, site 32/4; *Regenye* [1991])
69. Mencshely–Murvagödrök II (*Mészáros* [1948]; MRT 2, site 32/4)
70. Vöröstó–Ragonya (*Mészáros* [1948, 9]; MRT 2, site 55/6)
71. *Pécsely–Zádorvár* (*Mészáros* [1948], 27-29; MRT 2, site 40/3)
72. Nagyvázsony–Baráti dűlő-csapás I (MRT 2, site 33/12)
73. Csajág–Röcsöge (MRT 2, site 15/7)
74. *Rezi–Csókakő* (*Sági–Törőcsik* [1991])
75. Barnag–Remetekert (MRT 2, site 12/10)
76. Sóly–Rétmelléki dűlő (MRT 2, site 42/4)
77. *Várpalota–Hangyálos* (MRT 2, site 49/37)
78. Monoszló (MRT 1, site 31/2)
79. *Adorjánháza–Uras dűlő* (MRT 3, site 1/6, site 1/16)
80. *Csögle–Pusztaszőlő* (MRT 3, site 11/3)
81. Csögle–Dobra-gödör (*Sági–Törőcsik* [1991])
82. Dabronc (MRT 3, site 12/2, site 12/6)
83. Külsővat–Bánhalma (*Sági–Törőcsik* [1991])
84. Külsővat–Gányi-tó (*Sági–Törőcsik* [1991])
85. Gógánfa (MRT 3, site 17/1, site 17/9)
86. *Vaszar–Bánhalma* (*Sági–Törőcsik* [1991])
87. Kamond (MRT 3, site 23/10)
88. Kerta (MRT 3, site 26/4)
89. *Kisberzseny* (MRT 3, site 27/7, Fig. 38. 30-32)
90. Megyer (MRT 3, site 36/1, site 36/2)
91. Csikvánd–Kalmártag (*Sági–Törőcsik* [1991])
92. Mihályfa (MRT 3, Fig. 37. 8)

93. Nagyalásony (MRT 3, Fig. 38. 5)
94. Óhíd (MRT 3, Fig. 45. 8)
95. *Rigács* (MRT 3, site 45/2, Fig. 51. 18-32)
96. Somlószőlős (MRT 3, site 51/7, site 51/8)
97. Szentimrefalva (MRT 3, site 58/4)
98. Tüskevár (MRT 3, site 601/10)
99. Veszprémpinkóc (MRT 3, site 62/1)
100. Vindornyaszőlős (MRT 3, site 64/5)
101. Kenese–Akarattya (MRT 2, site 8/12)
102. Vászoly–Temető (MRT 2, site 50/2)
103. Alsóörs–Középsok (MRT 2, site 1/4)
104. Lovas–Királyrét (MRT 2, site 30/8)
105. *Balatonszepezd* (MRT 1, site 9/8; *Kalicz* [1978–79])
106. *Balatonederics–Szárazszeg* (*Sági–Törőcsik* [1991])
107. Aszófő–Vörösmáli szőlők (MRT 2, site 2/7)
108. Balatonszőlős–Evetesvölgyi Séd (MRT 2, site 9/9)
109. Balatonudvari–Öregrét (MRT 2, site 10/3)
110. *Zánka–üdülő* (MRT 1, site 60/7)
111. *Zánka–Vasútállomás* (MRT 1, site 60/10)
112. *Révfülöp* (MRT 1, site 38/2; *Kalicz* [1978–79])
113. *Tihany–Apáti* (P. Rainer's excavation, J. Regenye's kind pers. comm.)
114. Kövágóörs–Pálköve (MRT 1, site 24/2; *Sági–Törőcsik* [1989]; *Sági–Törőcsik* [1991])
115. *Törekpuszta* (*Sági–Törőcsik* [1989])
116. *Diszel* (*Sági–Törőcsik* [1989])
117. *Taliándörögd* (MRT 1, site 48/1)
118. *Tapolca–Plébániakert* (*Sági–Törőcsik* [1989]; *Sági–Törőcsik* [1991])
119. *Tapolca–Halápi-malomi dűlő* (*Sági–Törőcsik* [1991])
120. *Sáska* (*Sági–Törőcsik* [1989])
121. *Vonyarcvashegy* (MRT 1, site 55/1; *Kalicz* [1978–79])
122. *Gyenesdiás* (MRT 1, site 13/1)
123. *Lesencefalu* (MRT 1, site 26/2)
124. Litér–Kéktói dűlő (MRT 2, site 29/4)
125. *Lickóvadamos–Mukucsfalu* (L. A. Horváth's kind pers. comm.; *Horváth–H. Simon* [2003])
126. *Andráshida–Gébárti tó III* (*H. Simon* [2002])
127. Ormándlak (*Müller* [1971])
128. Pálfiszeg (*Müller* [1971])
129. Becsvölgye (*Müller* [1971]; *H. Simon* [1990])
130. Nova (*Müller* [1971]; *H. Simon* [1990])
131. *Petrikeresztúr–Pinkóca* (L. A. Horváth's kind pers. comm.; *Horváth–H. Simon* [2003])
132. *Sé* (*Kalicz* [1978–79])
133. Ramocsa–Tölgyeserdei dűlő (Bánffy et al. in press)
134. *Szentgyörgyvölgy–Haraszti erdő* (Bánffy et al. in press)
135 *Szentgyörgyvölgy-Pityerdomb* (*Bánffy* [2000a]; *Bánffy* [2000b]; *Bánffy* [2000c])
136. Nemesnép–Külső-micske (*Bánffy et al.* in press)
137. Kerkafalva–agyag (*Bánffy et al.* in press)
138. Csesztreg-Felsőerdei dűlő (*Bánffy et al.* in press)

139. Zalabaksa–shore of the Cupi stream (*Bánffy et al.* in press)
140. Zalabaksa-Győrfa (*Bánffy et al.* in press)
141. Kerkabarabás-Barabási háromszög (*Bánffy et al.* in press)
141. *Becsehely II* (*Kalicz* [1978–79])
142. *Szentgál–Tűzköveshegy–prehistoric mine* ([1948]; *Biró–Regenye* [1991])

The early Linear Pottery sites listed here (indicated with italics) can be divided into two major groups according to their location. The settlements in the first group usually lie on low ridges, on the slopes of the north-south hills of the Zala Hills or on small elevations overlooking lakes, streams and rivers, such as the Zala River, the Szentgyörgy Stream, the tributaries of the Kerka and the Egervíz in the Vázsony Basin. The Linear Pottery sites in the Kerka Valley, Becsehely II and the majority of the sites west of Lake Balaton can be assigned here, together with some of the early sites west of Lake Balaton and a few settlements above the northern shore of the lake. Nevertheless, settlements sited on terraces above water do not mean higher-lying sites in the early Linear Pottery phase. As N. Kalicz noted, "sites of the earliest phase are never found on the second or the higher terraces."[33] I. Torma and E. Bácskay made a similar observation, from which they concluded that this can probably be seen as the continuation of Starčevo–Körös traditions.[34]

The changes in the shoreline of Lake Balaton, however, set some of the sites lying on higher ground in a new perspective. How far above the then water level did these sites actually lie? According to the description of the site, the Gyenesdiás settlement lies on a high bank overlooking the Balaton, while the Balatonszepezd settlement is sited on a small hill rising above the lake and a small stream flowing into it. We know that the Tapolca Basin was connected to Lake Balaton when the water level was higher, as in the Early Neolithic, and thus the majority of the early Linear Pottery sites in that area, such as the one as Lesencefalu, can be regarded as settlements in a lacustrine environment.[35]

The situation is different as regards the early Linear Pottery sites in the other group. These lie lower than the ones in the first group; in view of the lake's one-time higher water-level, these sites lay in the marshland or on small islets in the marshland *(Fig. 163)*. The sites in this group include the ones in the Little Balaton area. The five early Linear Pottery sites near Sármellék listed in the MRT 1 volume all lie along the one-time bay of the lake on the eastern side of a ridge rising no more than 1-2 m above the marshland.[36] The same holds true for the sites in the Zalavár area, the only difference being that these sites lie on the western side of the one-time islet: Zalavár–Belterület, Szabó-tanya, Hosszúsziget and Ürmöspuszta.[37] The settlement at Keszthely–Dobogó-Verébhegy too lay in a marshy area; the one at Keszthely–Újdűlő was located on the gently sloping shore of the bay, the Keszthely–Méntelep settlement too lay on the shore in a marshland, while the settlement identified east of the Balaton Museum was sited in an area overlooking the bay and surrounded by water on three sides.[38] The settlements at Keszthely–Fenékpuszta, Vörs, Garabonc–Ófalu and Balatonmagyaród lie on islets rising above the marshland; the Kéthely site is located on the eastern fringes of the Little Balaton marshland. The sites identified at Zánka–Üdülő and Zánka–Railway station,[39] as well as the early Linear Pottery site at Révfülöp, lie on the northern shore of Lake Balaton, directly by the water.[40]

[33] *Kalicz* (1988) 137.
[34] *Torma* (1969); *Bácskay* (1982): 544.
[35] Pál Sümegi's kind personal communication; MRT 1 108; *Cserny–Nagy-Bodor* (1998); *Nagy-Bodor et al.* (1999).
[36] MRT 1 137–139.
[37] MRT 1 183–189.
[38] MRT 1 90–95.
[39] MRT 1 191–192.
[40] MRT 1 133.

Even today there are marshy valleys between the north-south ridges along the southern shore of the lake and the groundwater flows into the lake through a series of artificial channels. The series of north to south oriented small lakes and marshy basins can be well observed on maps of the area, close to Marcali, Lengyeltóti or Somogyvár, north of Kaposvár and Dombóvár. The Rinya and the other rivers flowing from north to south once linked the Balaton and the Drava[41] and we also know that the valley below the Benedictine abbey of Somogyvár was watered by the lake through the Nagy-árok, a trench extending from the eastern side of the Várhegy at Fonyód.[42] The sites along the southern shore of the lake (Balatonszentszörgy, Balatonlelle, Balatonszemes, Szárszó and Balatonföldvár) thus probably lay directly along the marshy-reedy shoreline, similarly to the Görgeteg settlement lying by the Rinya and the four sites north of Kaposvár.

Finally, I treated as a separate group the Linear Pottery sites whose exact date could not be determined since the finds were collected during field surveys *(Figs 164–165).*[43] According to the site descriptions in the MRT volumes, the Csajág site lies on a loess hill,[44] one of the sites in the Hidegkút area is located on loessy soil in the stream valley,[45] while the settlement at Lovas–Királykút is sited a little farther from the shore, on the edge of a loess hill.[46] Of the settlements identified in the Veszprém area, the Somos II site is located on the side of a gently sloping loessy hill.[47] Óhíd,[48] Somlószőlős[49] and Szentimrefalva,[50] settlements farther north of Lake Balaton, all lay on higher lying, loessy soil. The finds from the two latter sites can be definitely assigned to the later, Keszthely phase.[51]

It would appear that loessy soils were preferred during the classical Linear Pottery phase. Taking the entire Linear Pottery sequence into consideration, the almost consistent choice of loessy soils is even more striking. As regards the sites in Veszprém county, I. Torma noted that the number of Linear Pottery sites (including the settlements of the Notenkopf and Zselíz phase) totalled 128 and that "the greater part of the densely settled areas was covered with a loess layer of varying thickness."[52]

Discussion

The Starčevo settlement pattern

In spite of the rather low number of known sites, it is clear that the late Starčevo communities colonizing Transdanubia avoided Lake Balaton and that after reaching the marshland of the Little Balaton these groups turned west. The boundary of the Starčevo expansion is perhaps marked by the sites at Becsehely and Pityerdomb. Both areas had originally been covered with loessy soil; at Pityerdomb, this loess cover was washed away by the rain and the soil became clayey.[53] It would appear that the Balkanic immigrants avoided the Balaton area and settled on the western Transdanubian loess mounds. Two possible explanations can be cited: the first, that the Starčevo

[41] Pál Sümegi's kind personal communication.
[42] *Bakay* (1989) 105.
[43] I did not include the sites where Notenkopf and Zselíz sherds had also been collected. Although it is possible that these sites had already been occupied during the early Linear Pottery or the Keszthely phase, this can only be confirmed by an excavation.
[44] MRT 2 76, site 15/7.
[45] MRT 2 108, site 24/7.
[46] MRT 2 125, site 30/8.
[47] MRT 2 250, site 5169.
[48] MRT 3 178, site 45/8.
[49] MRT 3 191, 209, site 51/7.
[50] MRT 3 site 58/4.
[51] MRT 3 Fig. 55/13–15, Fig. 62./16–18, Fig. 75/6–12.
[52] *Torma* (1994) 65.
[53] Pál Sümegi's survey. I would here like to thank him for this information.
[54] *Kalicz* (1990) 41.

Fig. 165. Sites of the classical Keszthely phase of the Linear Pottery along the shores of Lake Balaton (satellite photograph)

communities simply disliked marshlands since these areas were unsuitable for cultivation. This is also supported by the fact that not one single Starčevo site was found in the area between the Kapos Valley and the southern shore of Lake Balaton during the thorough and systematic field surveys conducted by I. Torma and his colleagues.[54] An alternative explanation is that the immigrant Starčevo groups preferred to settle in less densely populated areas, the implication being that an indigenous population inhabited the areas along the western basin of the lake and that the Starčevo communities knew of these indigenous groups and came into contact with them. It is my opinion that both explanations are valid and do not exclude each other.[55]

The single exception is the Vörs site. The settlement lay on a loessy ridge that became an islet in the marshland owing to the rise in water level before the onset of the Neolithic.[56] It is instructive to compare the late Starčevo finds from southern Transdanubia (e.g. Babarc, *Figs 166–167*) and Becsehely with the assemblages from Vörs.[57] The pottery from the former two sites shares more similarities with the finds from Gellénháza, lying farther to the northwest, and Pityerdomb than with the ceramic assemblage from Vörs. A direct contact could be demonstrated between Pityerdomb and Gellénháza (reflected, for example, in the loom weights used at both settlements). The

[55] There is now evidence for the presence of the Starčevo culture on the southern shore of Lake Balaton. A small pit containing typical Starčevo pottery was uncovered during the rescue excavation preceding the construction of the motorway junction at Balatonlelle. This would suggest that the reluctance of the Starčevo groups to settle in the marshland area along the southern shore of the lake cannot be explained by assuming that the area was unfamiliar to them. I would here like to thank Tibor Marton, director of the excavation, for sharing this information with me.

[56] *Jaskó* (1947). Pál Sümegi called my attention to the pedology of the site.

[57] Cp. Chapter 5 on the ceramic finds and *Bánffy* (2000a).

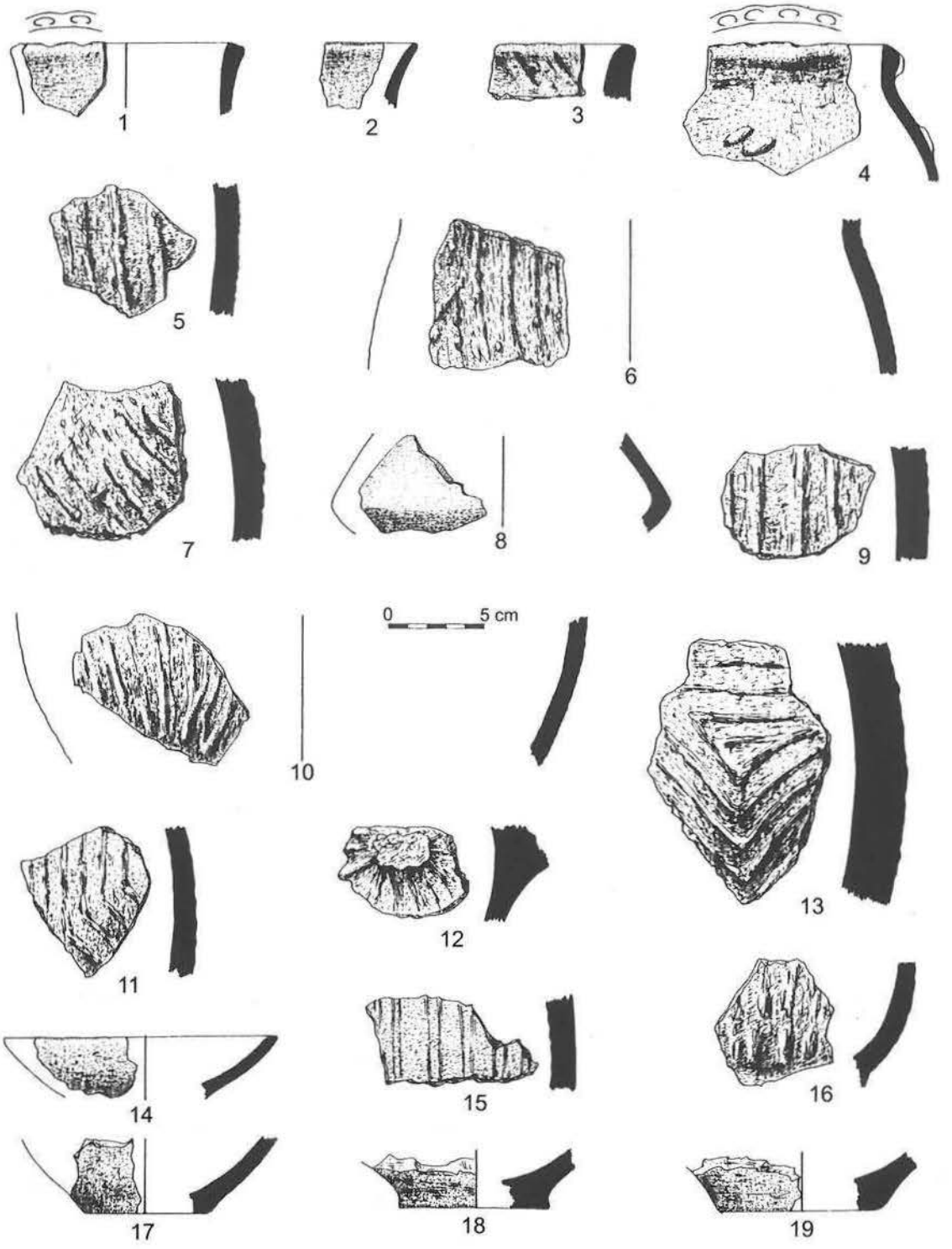


Fig. 166. Babarc. Late Starčevo pottery from southern Transdanubia (after Bánffy 2001)

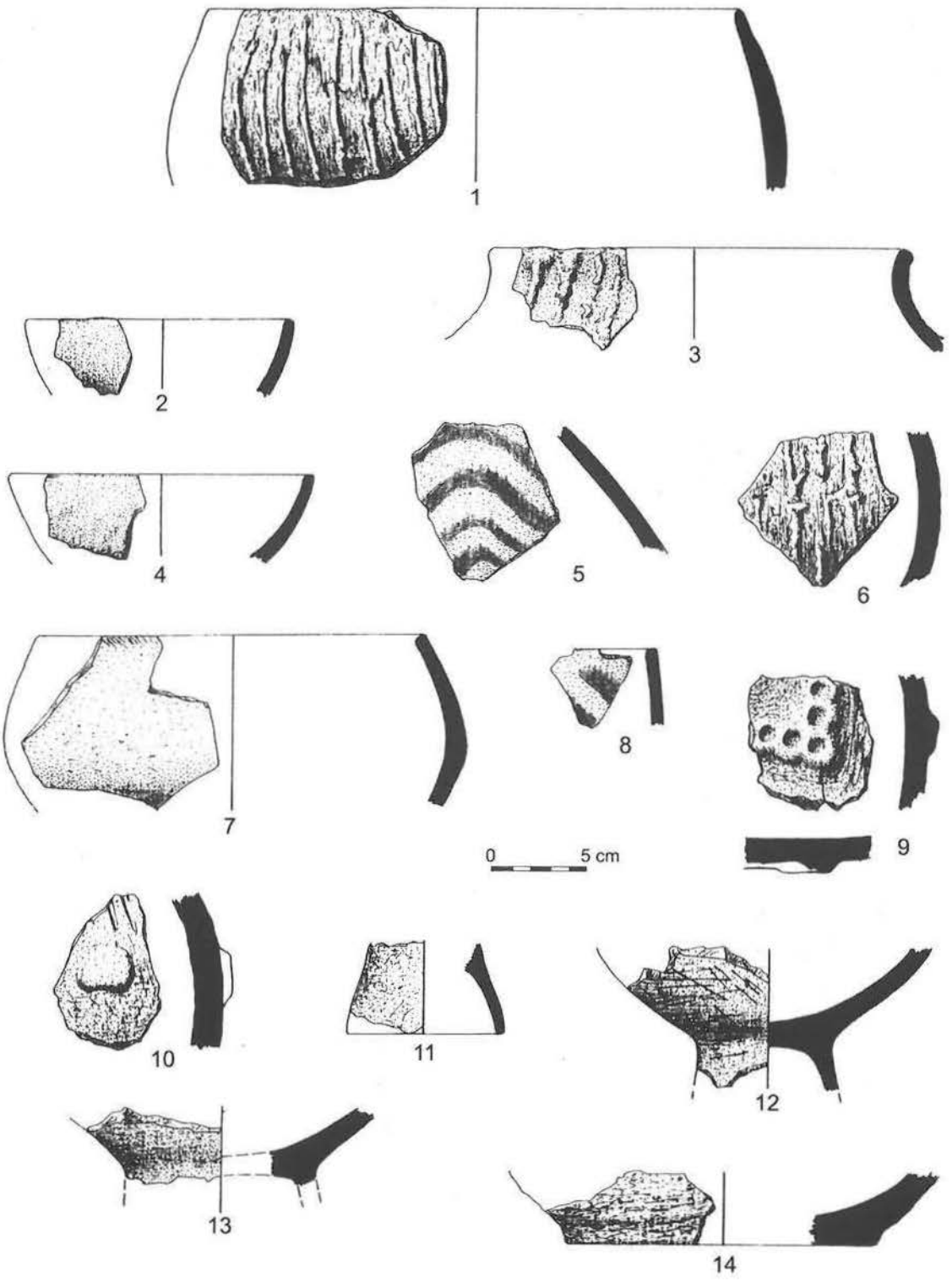


Fig. 167. Babarc. Late Starčevo pottery from southern Transdanubia (after Bánffy 2001)

finds from both sites reflect strong Balkanic roots, a much stronger one than can be assumed in the case of the Vörs settlement, at least judging from the published assemblages[58] and the finds from the 2000 season.[59]

Assuming that the immigrant farmers from the Balkans came into contact and mixed with the late Mesolithic indigenous groups, it is possible that the occupants of the Vörs–Máriaasszony-sziget settlement included a higher proportion of the latter, who preserved their Mesolithic lifestyle and subsisted primarily on fish and waterfowl. The long period of contact between the two groups is confirmed by the date of 5400 calBC for Pityerdomb and Vörs (cp. Chapter 7, on the radiocarbon dates).

The Linear Pottery settlement network

The early Linear Pottery sites identified during field surveys and from surface finds along Lake Balaton allow three major conclusions. The first of these is that the settlements are densely sited. However, it is a commonplace that while surface pottery finds are indications of human activity in a particular area, they do not necessarily indicate the presence of a settlement. This could be especially well observed in the case of the twelve Linear Pottery sites identified in the few square kilometres surveyed as part of the Kerka Valley Micro-Region Project and it seems likely that the same holds true for the conspicuously dense settlement network around the western Balaton basin. The high number of finds does not necessarily reflect a dense settlement network – although many of the registered sites were undoubtedly settlements, others merely indicated some human activity, perhaps no more than that a fire was lighted at an overnight campsite, where the sherds of a broken vessel were left scattered on the surface and where perhaps a few stone implements were lost. Household refuse, smaller sherds and stone tools may also have been taken to the fields with the manure at the time when cultivation became more intensive. E. Lenneis has aptly noted than an assemblage of this type may well have been left by a single individual travelling through the area.[60] What is quite certain is that the early Linear Pottery communities had explored and were familiar with the entire area.

Forest clearings were needed for establishing settlements and for feeding animals. Similarly, there was need for paths leading through the forests in order to monitor and control the movement of wild herds and to ensure the unrestricted movement of the settlements' occupants, for example to the Kabhegy elevation rising above the dense forest or to the Szentgál mine in the Bakony Mountains. Suffice it here to quote but one example: it seems likely that the erosion observed at Balatongyörök–Zsöllehát can be attributed to forest burning.[61] The secondary vegetation originating from refugia in the new environment of the eroded area indicated some sort of anthropogenic influence, most probably intentional forest burning that coincided with the appearance of early Linear Pottery groups in the area.[62]

The other conspicuous feature is the location of the sites. Most of the early Linear Pottery sites lie either on the lowest abrasional terraces above the lake (these lay directly on the shore during the Neolithic when the water level was higher) or in the marshland along the shore or on islets near the shore *(Fig. 163)*. This environment was suited to different activities: fishing, the hunting of waterfowl and various wild mammalian species using the area as a watering place, as well as

[58] *Kalicz–M. Virág–T. Biró* (1998).

[59] I would here like to thank the excavators for kindly permitting me to study the finds.

[60] *Lenneis* (2002 [2001]) 100.

[61] I found the finds from this site in the storehouse of the Tapolca Museum. *Sági–Füzes* (1973) 252.

[62] *Füzes* (1991) 281.

to gathering edibles in the woods and thickets along the shore. However, it is wholly unsuited to cultivation! When the Starčevo immigrants from the south reached the Berek marshland north of the Kapos River, they turned west in search of loessy soils, undeterred by the hilly regions covered with beech forests and the subalpine climate. The early Linear Pottery groups gradually moved away from the waterlogged marshland areas and settled on the loessy hillsides and flat ridges. The sites of the early and classical (Keszthely) phase lie in close proximity to each other on the hills flanking the valley of the Marcal and its tributaries, such as the Torna and Hunyor streams *(Fig. 165).*[63] A similar observation was made in the regions north and west of Transdanubia: settling exclusively on loessy soils, the Linear Pottery communities created niche-like settlement clusters *("Siedlungskammer")* – the expansion of these communities extended to the boundaries of the loessy region.[64] It would appear that the change was brought about by the shift to intensive agriculture, no doubt stimulated by the gradually warming, but nonetheless wet climate that created more favourable conditions for cereal cultivation.[65]

The appearance of cultivated cereals

The first indications of wheat cultivation in the Balaton area can be noted already in the early Linear Pottery phase, even though the settlements lay in environments more suited to Mesolithic lifeways. An incipient form of agriculture is indicated by the altar fragment with eyes of inset wheat grains from Kéthely (described in Chapter 6, discussing the cult finds) and by the pollen profiles from the Tapolca Basin and the Keszthely area.[66]

The implications of the pollen samples from Keszthely–Úsztatómajor have already been mentioned in connection with the increase of hazel in the period directly preceding the Neolithic. Another observation was that in the later 6th Millennium, hazel gradually declined and, concurrently, cereal pollens made their appearance.[67] The pollen profiles from the Tapolca Basin reflect a similar process.[68]

Cereal remains were identified among the organic temper used in pottery making at the late Starčevo site of Dombovár–Gunaras and Kaposvár–Kisgáti-dűlő. In addition to spelt (*Triticum dicoccum*) and six-row barley (*Hordeum vulgare* ssp. *hexastichon* L.), M. Füzes also identified pea (*Pisum sativum* L.),[69] the earliest occurrence of this species in the Carpathian Basin. This confirms that early Neolithic pea probably reached the Subalpine region of Pityerdomb with Starčevo mediation.

Farther to the north, the first cereal remains were recovered from the sediment of Lake Balaton.[70] A number of sites yielded various cereal remains: einkorn (*Triticum monococcum*), spelt (*Triticum dicoccum*), common wheat (*Triticum aestivum* L.), two-row barley (*Hordeum* sp. *cfr. distichon* L.) and millet (*Panicum miliaceum*) were identified at Kéthely, Zánka–Vasútállomás, Balatonszentgyörgy, Tapolca–Plébániakert and Adorjánháza.[71] In spite of the wide range of cultivated cereals, the actual amounts found at each site were rather low.[72] It is rather instructive to compare these cereal remains with the macrobotanical finds from the Pityerdomb site: with the exception

[63] MRT 3; *Torma* (1994).

[64] *Ruttkay–Wessely–Wolff* (1976) 840–850, *Lenneis* (1982); *idem* (1995); *idem* (2001); *Lüning* (2000); *Bogucki* (1982); *idem* (1988); *idem* (2001).

[65] *Kordos* (1987) 20; *Somogyi* (1987) 29.

[66] *Füzes* (1989); *Juhász* (2002); *Zólyomi* (1980); *idem* (1995); *Nagy-Bodor–Járai-Komlódi* (1999); *Medzihradszky–Járai-Komlódi* (1996); *Medzihradszky* (2001).

[67] *Medzihradszky* (2001): 9, Fig. 2.

[68] *Medzihradszky–Járai-Komlódi* (1996) 23.

[69] *Füzes* (1991): 283–284.

[70] *Zólyomi* (1980); *Nagy-Bodor* (1988).

[71] *Füzes* (1989): 159–172; *idem* (1991) 277–297.

[72] *Nagy-Bodor–Járai-Komlódi–Medve* (1999); *Zólyomi* (1995).

of millet and barley, the same range of cereals were cultivated; the oat remains found at the site may have come from a wild species.[73] Another similarity is that each species was represented by a few grains at both sites, suggesting cultivation on a small scale, perhaps in the open areas between the houses, resembling horticulture rather than large-scale cultivation. The fact that the cereal species were identical indicates that the know-how of plant cultivation was adopted from the immigrant Starčevo groups.

These three factors – the density of sites, their location and the small-scale cultivation of cereals – indicate that even though the indigenous hunter-gatherer groups had mastered the art of cultivation, they experimented with this new technique over smaller areas only, for example in the open spaces between the houses, owing to the unfavourable environment of their settlements. This is also valid if viewed from the opposite perspective: the smallness of the areas suitable for grain cultivation in the marshland environments and the damage probably caused by rodents and other pests would hardly have encouraged a subsistence based on the cultivation of domesticated plants in western Transdanubia at the time of the transition to the Linear Pottery.[74] The early farmers' choice of settlement in close proximity to water was perhaps motivated by the fact that they could break the wet, loose soil more easily with their rudimentary tools (probably restricted to antler and stone hoes). It follows from the above that within the span of a few generations they moved to higher-lying areas where cereals could be cultivated more effectively and over a larger area. The data gained from the pollen and macrobotanical samples harmonize with the changes in settlement patterns and in the settlement network.

The results of recently published macrobotanical analyses from the Burgenland and Lower Austria reflect a similar process: the plant remains from the early Linear Pottery settlements at Strögen and Neckenmarkt, the latter a site that survived into the later Linear Pottery phase, differ from each other not as regards the number of species, but only as regards the actual amounts of cultivated plants.[75]

The earliest pottery (Figs 168–173)

Another striking phenomenon indicating, albeit *indirectly*, the presence of an indigenous population caught my attention during the analysis of the pottery finds. After examining the Starčevo and early Linear Pottery finds from Zala county, I also had the opportunity to examine the finds collected in the Balaton Uplands and the Marcal Valley, along the southern shore of Lake Balaton and in Somogy county. Most of these finds were collected during field surveys and were, more often than not, dated incorrectly: finds labelled as early Linear Pottery were mixed up with Copper and Bronze Age sherds or the other way round: the bags supposedly containing Baden and Late Bronze Age finds often yielded early Linear Pottery fragments.[76]

I tried to divide the find assemblages from the western Transdanubian sites into two groups, according to what extent the pottery resembled Starčevo wares. This attempt was a failure.

[73] *Berzsényi–Dálnoky* (in press).

[74] Cp. M. Füzes' detailed calculation: *Füzes* (1991) 319–329, with further literature.

[75] Cp. E. Lenneis' comprehensive overview, based on A. Kreuz's studies: *Lenneis* (2001 [2002]) 270–275.

[76] I am grateful to Judit Regenye for the possibility to study the finds stored in the Laczkó Dezső Museum in Veszprém. The municipal museum of Tapolca was closed down a few years ago; the archaeological and ethnographic collection can currently be found in a damp, dilapidated, windowless storehouse, carelessly thrown together and fated to eventual perishing. In view of these circumstances, I am greatly indebted to Judit Regenye and local historian László Hangodi, who beside kindly permitting me to study the impressive amount of finds collected by K. Sági and Z. Törőcsik during their field surveys, also devoted much energy to making these finds physically accessible.

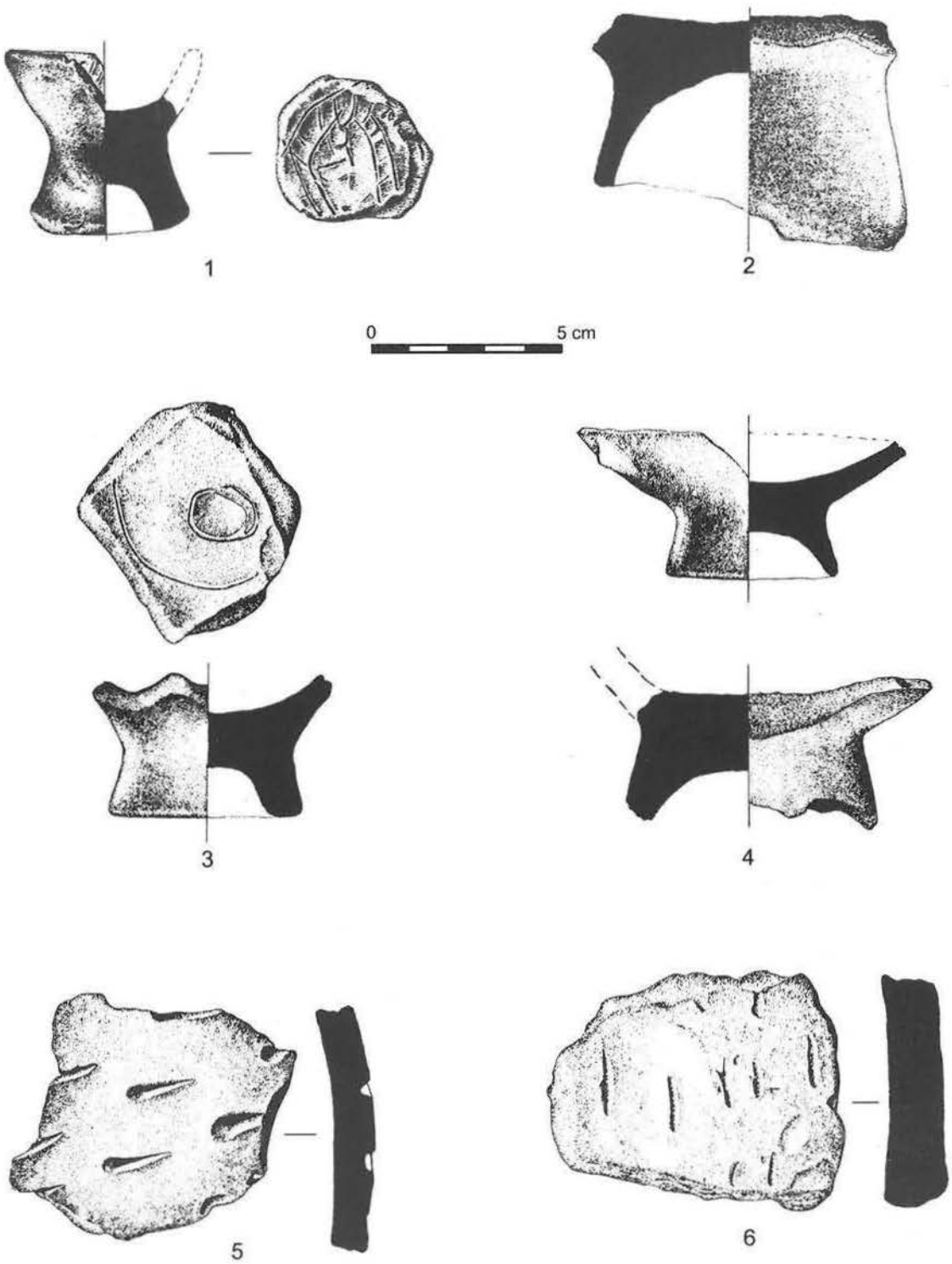


Fig. 168. The Earliest Neolithic finds from the Balaton region. 1. Kaposújlak; 2. Kaposfüred; 3, 7. Pusztaszemes; 4, 6. Kaposvár–Kisgáti dűlő; 5. Magyaregres (after Sági–Törőcsik, 1991)

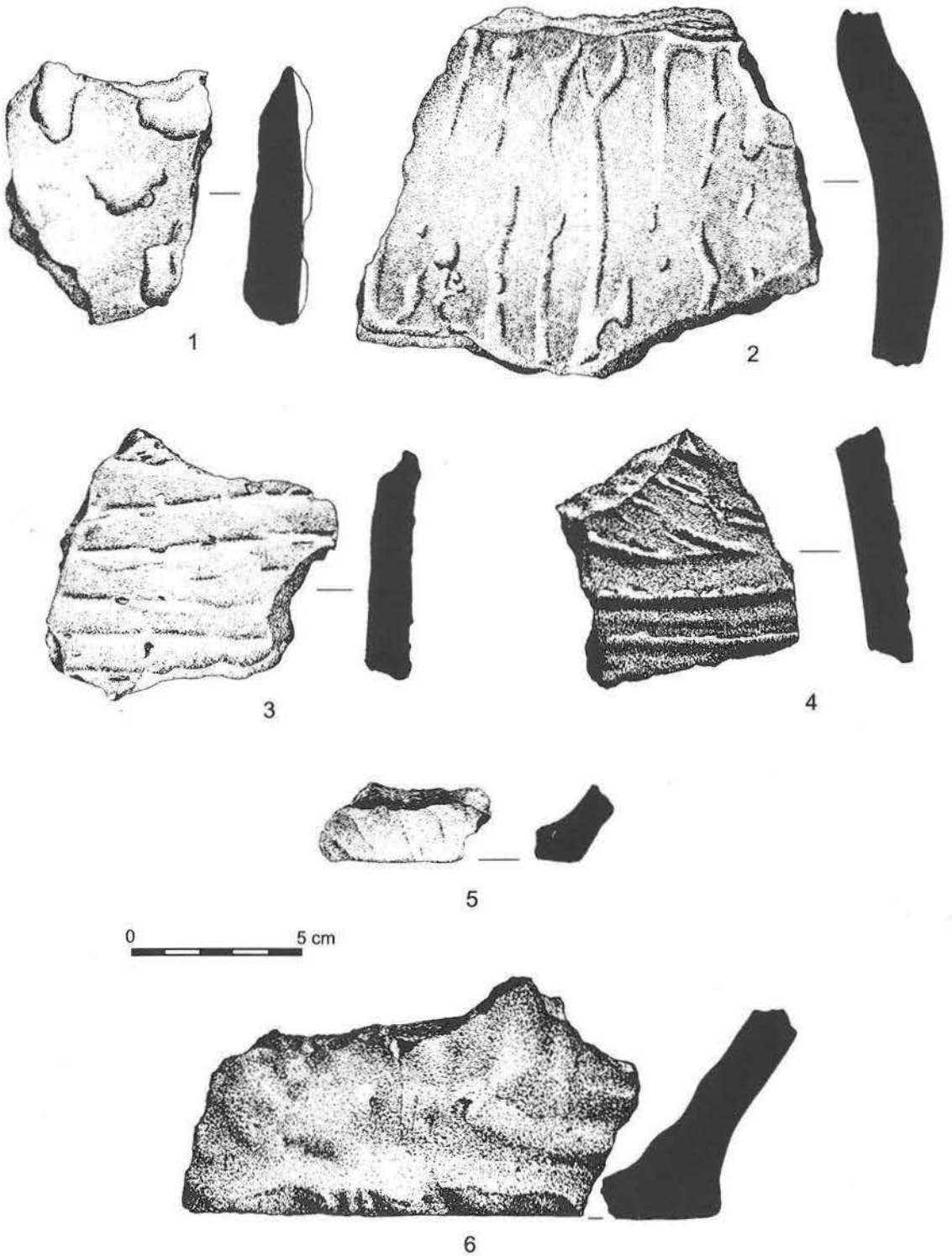


Fig. 169. The earliest Neolithic finds from the Balaton region. 1. Kaposvár–Kisgáti dűlő; 2. Dombóvár–Gunaras; 3. Mernyeszentmiklós; 4–6. Szólád (after Sági–Törőcsik, 1991)

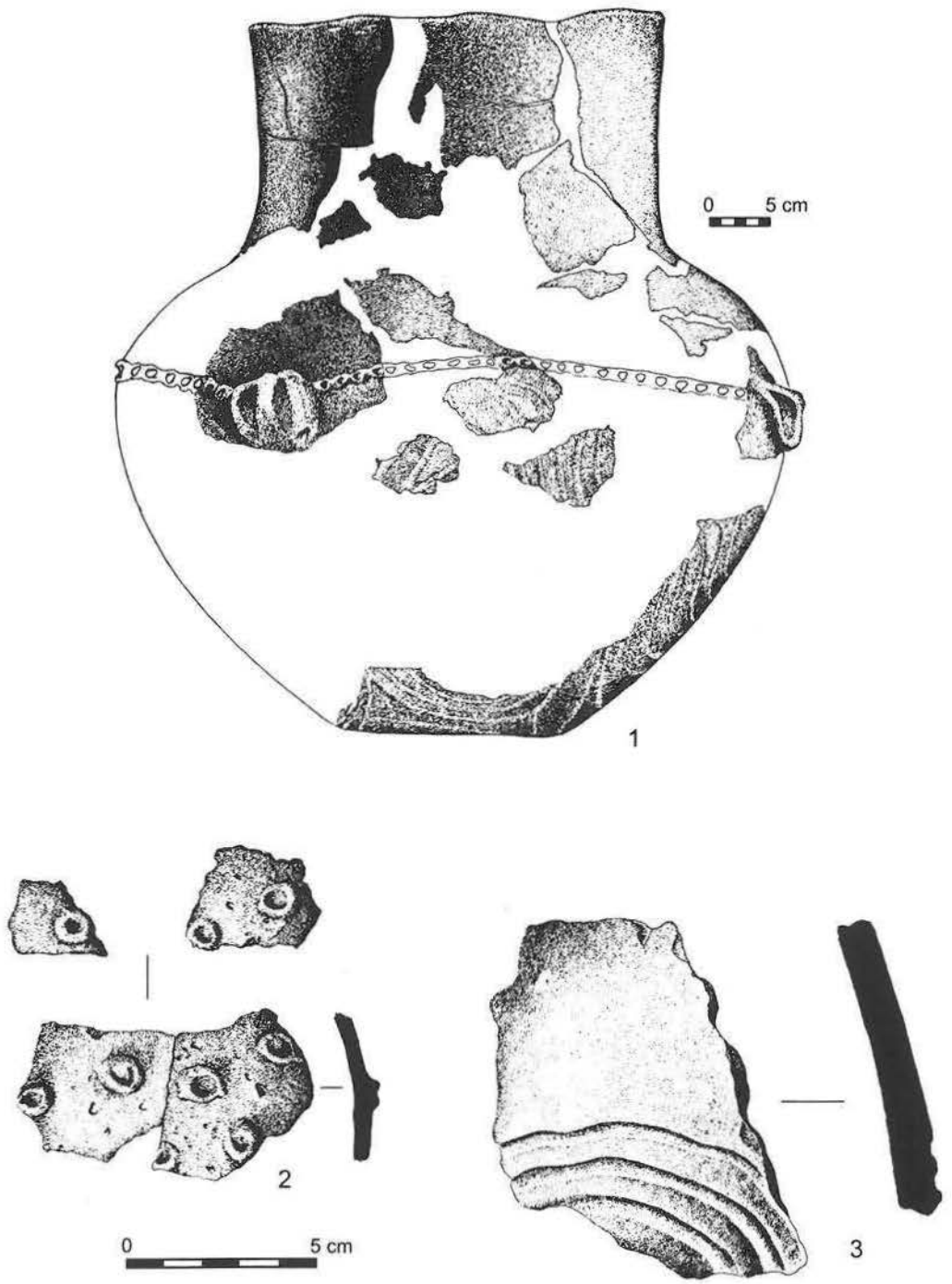


Fig. 170. The earliest Neolithic finds from the Balaton region.
1–3. Tapolca–Plébániakert (after Sági–Törőcsik, 1991)

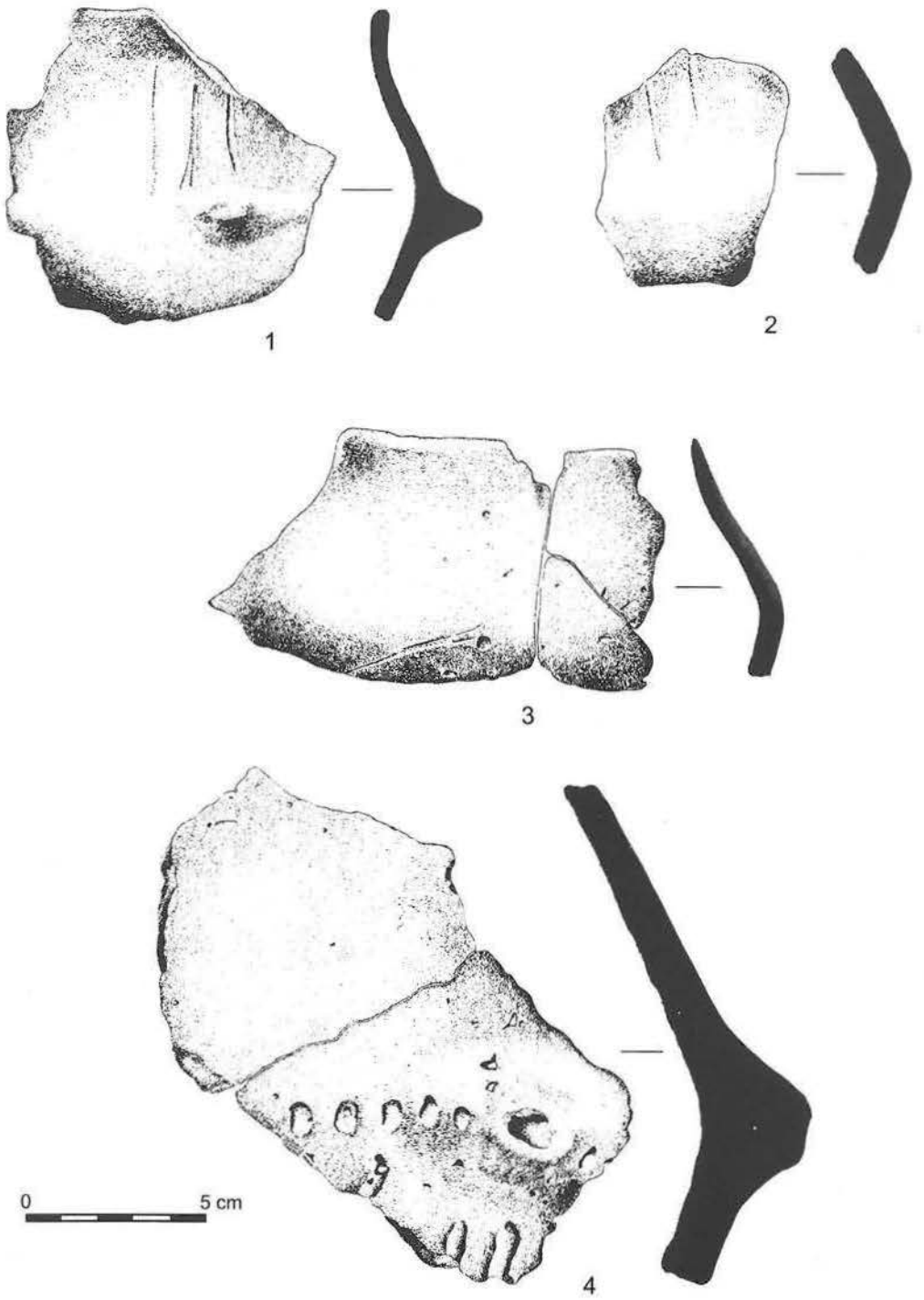


Fig. 171. The earliest Neolithic finds from the Balaton region.
1–3. Tapolca–Plébániakert (after Sági–Törőcsik, 1991)

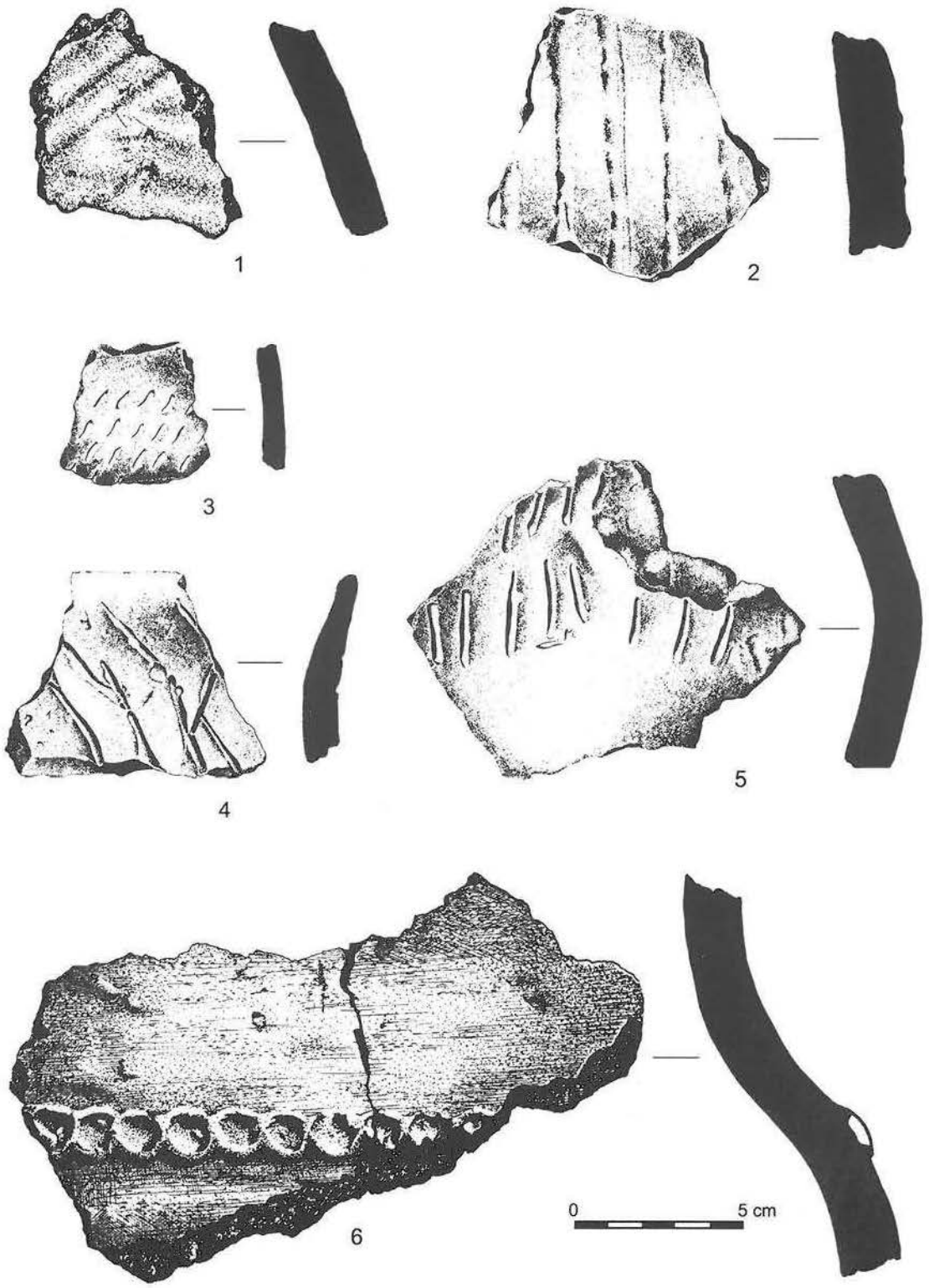


Fig. 172. The earliest Neolithic finds from the Balaton region. 1. Hegyesd–Ágói dűlő; 2–3. Csíkvánd; 4–5 Külsővat; 6. Hegyesd–Péterhegy (after Sági–Törőcsik, 1991)

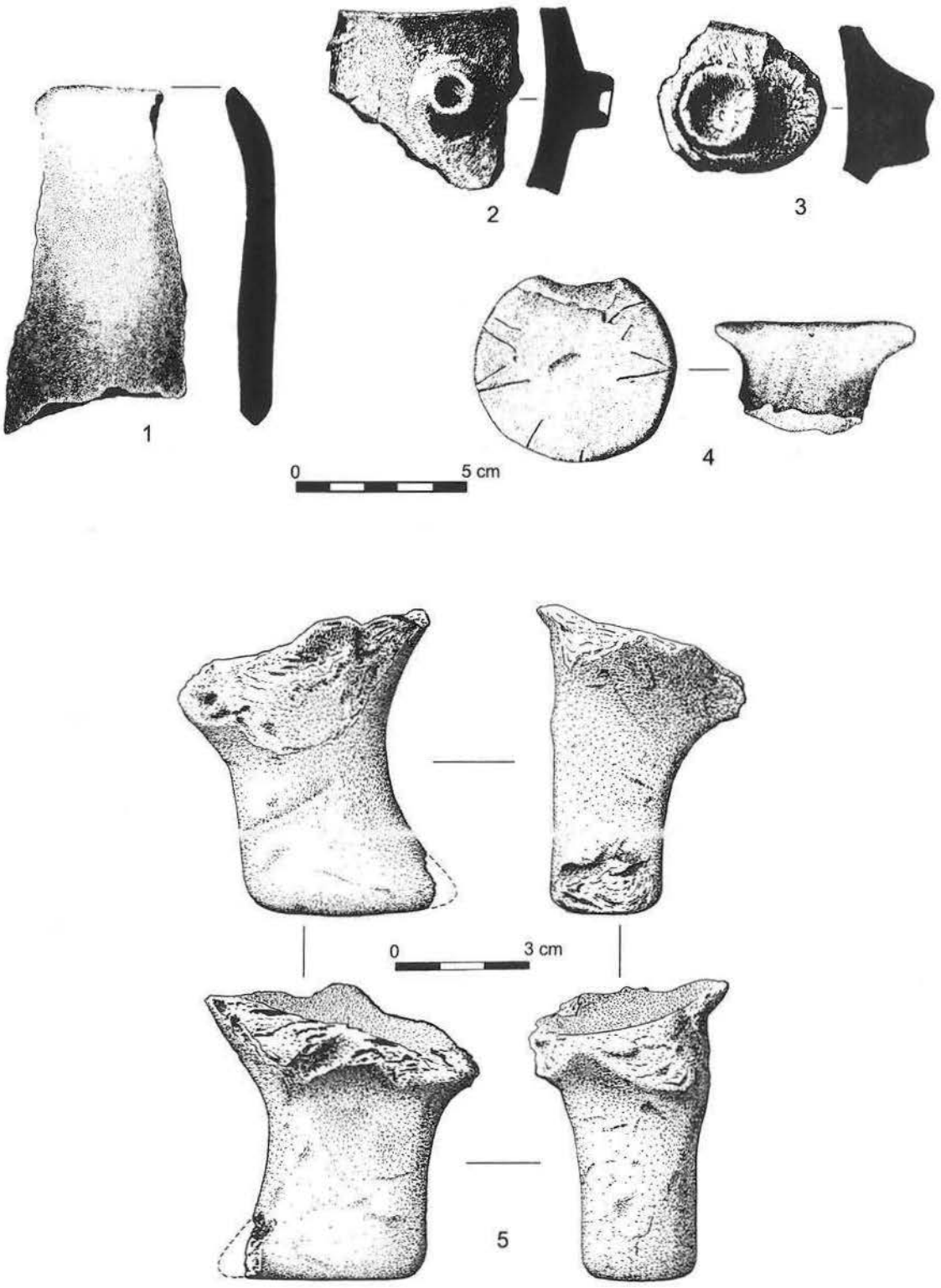


Fig. 173. The earliest Neolithic finds from the Balaton region. 1. Vaszar; 2–3. Rezi; 4. Törekpuszta; 5. Balatonszentgyörgy (1–4: after Sági–Törőcsik, 1991)

A number of sites, for example the ones in the Kapos Valley, could be wholly assigned to the Starčevo culture. The pottery assemblage brought to light in the spring of 2002 during the excavation of a medieval keep at Tihany–Apáti[77] can also be assigned here. The site lies on the marshy plain between the peninsula (originally an island) and the northern shore of Lake Balaton. The lacustrine marshland environment has much in common with that of the Vörs settlement and the other early sites. The freshly washed pottery in the Felsőörs storeroom also included fragments from biconical vessels covered with a polished, dark red slip recalling the Pityerdomb pottery, suggesting that it should be regarded as a genuine Balkanic, Starčevo type pottery rather than early Linear Pottery ware. Similar pottery with a bright or dark red polished slip was recovered from Rezi–Csókakő. Pottery fragments covered with the distinctive smoky, reddish-brown slip of the Starčevo culture have also been found north of Lake Balaton, for example in the Marcal Valley (Csíkvánd and Külsővat). The pottery sherds from the Sármellék area could also be assigned to the Starčevo culture. It would appear that the good quality pottery originating from the Balkans found at Pityerdomb can also be documented on several other western Transdanubian sites. Starčevo wares more typical for this culture than the pottery found at the late Starčevo settlement of Vörs–Máriaasszonysziget occur both in the ceramic assemblage from Pityerdomb and among the finds from other sites that I had examined.

The other group of sites would have included those settlements whose pottery could not be regarded as genuine Linear Pottery wares (e.g. because linear patterns were either entirely lacking or were very rare) and whose assignment to this phase was based solely on the low firing temperature, the "sandwich" core (red-black-red) and the chaff and sand temper of the pottery. The basic problem was that all of the pottery assemblages in question contained certain Starčevo elements, even if in differing proportions, and that most of these survived into the early Linear Pottery period. In addition to vessel fragments decorated with Schlickwurf or barbotine, these assemblages usually included pottery types that were common to both the early Linear Pottery phase and the late Starčevo period of Transdanubia. These wares were almost exclusively tempered with chaff and sand. Very rare was the sherd without micaceous sand and even more rare the pottery fragment tempered with sand and tiny pebbles. Although vessel types could rarely be reconstructed from the surface finds, it was striking that in addition to low pedestals and foot-rings, the finds also included the rim fragment of a pot whose only parallel came from Pityerdomb *(Fig. 173/1).*[78] The earliest Neolithic pottery from the Balaton area was usually bright red or yellowish red. Wares fired to a reddish-brown, smoky colour were more common at sites where the pottery exhibited a number of other Starčevo traits.[79] The pottery was probably fired at a low temperature: the vessel interior did not receive sufficient oxygen and the "sandwich" core could be observed on most vessels. The storage jars resembled the types with outturned or indrawn rim, a cylindrical neck and ovoid body found at Pityerdomb. The more finely made wares included a biconical bowl with incurving upper part.

The vessels were often covered with Schlickwurf or finger drawn barbotine. On a few fragments the barbotine decoration was arranged into a pattern.[80] One sherd was decorated with applied, finger

[77] The excavation was conducted by P. Rainer; the finds will be evaluated and published by J. Regenye. I would like to thank both of them for kindly permitting the site to be included in the catalogue.

[78] Vaszar–Tórét: *Sági–Törőcsik* (1991) Fig. 107/1, inv. no. 68.31.58.

[79] Aside from the Starčevo sites in the Kapos valley, comparable reddish-dark brown and greyish vessels were also found at Magyaregres, Mernyeszentmiklós and Külsővat–Gányi-tó.

[80] Szólád: *Sági–Törőcsik* (1991) Fig. 54/1, inv. no. 91.1.1.; Hegyesd–Ágói dűlő, *Sági–Törőcsik* (1991) Fig. 85/2, inv. no. 91.4.19.

impressed barbotine.[81] Almost every site yielded pottery fragments decorated with nail impressed or pinched decoration; on some sherds these were arranged into rows.[82] The most characteristic decoration was the finger impressed rib set under the vessel rim or on the belly of storage jars.[83]

The presence of smoothed-in patterns is especially noteworthy among the linear patterns. This decoration usually survived on the pottery finds from excavations, rather than on the sherds with worn surface lying scattered on the surface.[84] The curved triple line and a clumsy variant of patterns divided into panels could also be observed.[85] The patterns of short stabs recalled the pinched decoration of the Starčevo culture.[86] These decorative techniques were all used at Pityerdomb. In contrast, the pattern of irregular lines incised onto the base of pedestalled vessels, noted on two fragments collected during the field surveys in the Kapos Valley, was not observed at Pityerdomb. The fabric and the form of these pedestalled vessels and of the ring bases correspond to the types common in the Starčevo culture, this being the reason that I did not find any reason to question the dating of these finds.[87]

The interpretation of the clay object found at Törekpuszta–Kavicsbánya as a pintadera[88] *(Fig. 173/4)* is rather controversial. The object is flat and its rounded end bears light incisions arranged in a star-like pattern. The vessel foot recovered from Feature 12 at Pityerdomb can by all means be regarded as having been secondarily used as a pintadera for creating patterns with black paint. The lightly incised pattern on the Törekpuszta fragment, however, would hardly have left a trace on the surface stamped with it. The 'senselessness' of these light incisions is especially striking on an alleged pintadera, especially if compared to the other Early Neolithic pintaderas, all of which bear deeply incised patterns.[89] Aside from the form of the 'pintadera', there is another reason that I do not regard this object as a find of the 'Tapolca group' (dating to an entirely different period) as defined by the finders. If the object is turned upside down, it is quite obvious that the 'pintadera' is in fact an idol head of the type discussed in detail by D. Kaufmann.[90] An almost perfect analogy to the Törekpuszta idol can be quoted from Bad Nauheim–Niedermörlen, a settlement in Germany, whose finds show a striking resemblance to the late Starčevo–early Linear Pottery assemblages from western Transdanubia. The recently published cult finds from the site include an idol head with a flat, rounded top decorated with irregular short lines and two triangle motifs.[91] In view of the above, the 'pintadera' from Törekpuszta should rather be interpreted as an idol head fragment dating to the Early Neolithic.

Pottery of the same good quality as genuine Starčevo wares is rarely found on the western Transdanubia sites, while inferior, more rudimentary variants have been recovered from most sites in this region. The significance of the altar fragment from Kéthely lying on the eastern fringes of the Little Balaton area has been discussed in the section on the cult finds – it is my

[81] Tapolca –Plébániakert: *Sági–Törőcsik* (1991) Fig. 4/1, inv. nos 89.4.1. and 89. 4.2.

[82] Csíkvánd–Kalmártag: *Sági–Törőcsik* (1991) Fig. 111/1, inv. no. 68.120.10; Magyaregres (on a Starčevo type vessel with a brownish slip) *Sági–Törőcsik* (1991) Fig. 33/1, inv. no. 89.50.1.

[83] Tapolca–Plébániakert: *Sági–Törőcsik* (1989); *eadem* (1991) Fig. 1/1, inv. no. 88.7.4. Unfortunately, the finger impressed ribbed decoration sometimes proved misleading since a number of Copper Age vessel fragments, mostly those of the Baden culture, were also mistakenly dated to the Early Neolithic solely on the basis of this decoration.

[84] Tapolca–Plébániakert: Sági–Törőcsik (1991) Fig. 7/3, inv. no. 89.6.2. and Fig. 8/3, inv. no. 89.6.7.

[85] Tapolca–Plébániakert: *Sági–Törőcsik* (1991) Fig. 1/1, Fig. 11/1. and Fig. 6/2; Külsővat–Gányi-tó: *Sági–Törőcsik* (1991) Fig. 105.

[86] Külsővat–Gányi-tó: *Sági–Törőcsik* (1991) Fig. 105/3.

[87] Kaposújlak–Várdomb and Pusztaszemes: *Sági–Törőcsik* (1991) Fig. 35/1 and Fig. 31/1.

[88] *Sági–Törőcsik* (1991) Fig. 19/5.

[89] *Makkay* (1984); *Chapman* (2001b).

[90] *Kaufmann* (1976) Fig. 2.

[91] *Schade-Lindig* (2002a) Fig. 2/b; *idem* (2002b).

belief that this altar was a clumsy copy of a Starčevo altar. During my examination of the finds in the dilapidated storeroom of the Tapolca Municipal Museum, I came across another interesting cult find *(Fig. 173/5)*.[92]

According to the card in the paper bag, the object was found during the field survey conducted at Balatonszentgyörgy; it comes from the early Linear Pottery site identified earlier. The fragment is 6.2 cm high and 4.8 cm wide at the base. The foot shaped fragment was part of a poorly fired, reddish-grey vessel tempered with chaff and sand. Although the toes have broken off, the position of the heel and the foot indicates that this was a left foot and that it supported a vessel. The curve of the surviving vessel part suggests that it was a smaller anthropomorphic storage jar. The upper part of the foot is decorated with two short lines.

The best parallel to the anthropomorphic vessel with human foot from Balatonszentgyörgy is the unique anthropomorphic footed vessel from Pityerdomb. The latter, however, relates to the specimen from Balatonszentgyörgy as the carefully made Starčevo altar from Lánycsók to the Kéthely fragment. It would appear that the Balatonszentgyörgy fragment was a local copy of the good quality Pityerdomb vessel representing the carefully made wares of the Starčevo culture.

The pottery from the Balaton region and western Transdanubia again confirms the impression that the immigrant Starčevo groups came into contact with an unknown, indigenous population whom they in part avoided and in part arrived at some sort of *modus vivendi*. The pottery recalling genuine Starčevo wares is perhaps an indication that a few immigrants settled on the settlements of the indigenous population, perhaps through marriage. Different forms of imitation can be noted elsewhere, together with varying proportions of elements reflecting the formative Linear Pottery phase. Linear patterns appeared already in the late Starčevo period, as evidenced by the finds from Vörs, while pinched decoration was on occasion substituted by similar patterns made with some tool. Together with Pityerdomb, the sites related to the late Starčevo culture (and no doubt contemporary with this phase) and the ones representing the formative Linear Pottery,[93] outline a chronological horizon most probably preceding the emergence of the genuine Transdanubian Linear Pottery, i.e. the Bíňa–Bicske horizon.

This harmonizes neatly with N. Kalicz's observation, based more on an intuition and the overall impression of the pottery from Sármellék and Révfülöp, two sites in the Balaton area: "Am Nordufer des Balaton, vom Starčevo-Gebiet ziemlich weit nördlich entfernt, gibt es zwei Fundorte (Sármellék, Révfülöp), wo eine richtige Linearbandkeramik nicht zum Vorschein gekommen ist, obwohl man vielleicht die Funde wegen gewisser Zierelemente (Eindrücke unter dem Rand) in die Zeit der Kultur mit Linearbandkeramik setzen könnte. Die beiden kleinen Fundkomplexe betrachte ich als ein Fundmaterial vom Übergangstyp, die ich wegen ihrer Topographie und der erwähnten typologischen Argumente dem Kreis der ältesten Linearbandkeramik zugewiesen habe, jedoch hätte man sie – falls sie südlicher zum Vorschein gekommen wären – sogar auch in den Kreis der Starčevo-Kultur einreihen können."[94] Károly Sági and his colleagues were right, in a certain sense, to treat these transitional assemblages as a separate group (which they labelled 'Tapolca group'). In my opinion there was indeed a transitional group in western Transdanubia – the label 'Tapolca group', however, can be rejected since many of the finds assigned to this group by Sági and his colleagues actually date from a later period and the proportion of vessel fragments mistakenly identified as Linear Pottery wares is rather high. Most of these can be assigned to the Late Copper Age Baden culture, but they also included Bronze Age ones

[92] I would like to thank Judit Regenye and László Hangodi for their kind permission to publish this find (originally described as a vessel handle). Cp. also Chapter 6.

[93] The sites in italics in the register; these sites are marked with yellow on the map.

[94] *Kalicz* (1983) 118.

from the Tumulus period and the Late Bronze Age Urnfield culture. Owing to these obvious mistakes the designation "Tapolca group" should be discarded.

The pottery finds indicate that the area around Lake Balaton and western Transdanubia was inhabited during the late Starčevo period and that these communities came into contact with the immigrants from the south during this transitional phase; it seems likely that the two populations mixed to a certain extent and that the indigenous groups adopted the Neolithic innovations transplanted to this region from the south. This region can be regarded as a direct contact zone between the representatives of the Balkanic Neolithic and the Central European Early Neolithic. In this model we must by necessity assume a sparse, but nonetheless existing indigenous population.

The direct evidence for Mesolithic settlement

Assuming that the occupants of the early Linear Pottery settlements in the marshland along the lake were in fact identical with the late Mesolithic hunter-gatherer groups, one may be justified in asking where these groups lived and why no traces of their presence were found during the intensive field surveys.

There are two possible explanations. The first is valid in general and is usually offered in the case of areas where there are few or no traces of Mesolithic settlement.[95] According to this explanation, Mesolithic settlements were transient in nature and owing to the lack of refuse pits and other features dug into the ground, as well as the lack of buildings whose construction would involve earth-moving, they left no trace in the archaeological record. To which one may add that even the few traces of possible Mesolithic campsites were destroyed by agricultural cultivation extending over increasingly larger areas following the early Linear Pottery phase. The destruction of Mesolithic sites thus probably began by the Middle Neolithic and may even have ended during the same period in this part of Transdanubia. This may be the reason for the contradiction that in the Vázsony Basin, for example, late Mesolithic type lithics were found together with developed Linear Pottery or Keszthely type wares during the field surveys. One possible interpretation of this phenomenon has already been given in the above; here I would like to emphasize that these Mesolithic stone implements perhaps reflect the one-time presence of small Mesolithic campsites. It would be a rare instance of archaeological luck to find the same density of Mesolithic sites in Transdanubia as in the Jászság area – in view of the soil conditions, the Sárrét area, most of which was covered with water during the pre-Neolithic period, and the Kapos Valley are perhaps the two most likely candidates for discoveries of this sort.[96]

The second explanation would imply that no amount of luck will lead to the discovery of Mesolithic sites in the Balaton area. I have already quoted the analytical results according to which the centuries of the Mesolithic were characterized by a drier climate than the formative Linear Pottery phase in the mid-6th Millennium. It must also be borne in mind that the water level of Lake Balaton may have changed independently of the climatic conditions since the lake had several side-basins that occasionally drained the lake and decreased the water level.[97] Assuming that the Mesolithic groups had settled directly on the lake shore or on the marshland islets near the shore, these sites now lie under water.[98] When the water level of the lake rose, these Mesolithic groups no doubt

[95] *Gronenborn* (1999); *Jochim* (1990); *idem* (1998).

[96] This is also suggested by a harpoon found at Merítő-puszta near Csór: *Marosi* (1936) 83–85. The field surveys conducted by Róbert Kertész and Tibor Marton in the Kapos Valley, as well as their re-examination of earlier finds, may also lead to the discovery of mesolithic sites in the Kapos Valley.

[97] Pál Sümegi's kind personal communication.

[98] M. Füzes arrived at this conclusion from his study of the botanical evidence: *Füzes* (1989) 143–144. Pál Sümegi's recent surveys suggested that these submerged sites lie not along the current shoreline, but perhaps as much as 1 km away.

moved to slightly higher lying land, but remained in the marshland and the sedge-marshes lining the shore since these were the prime sources of their subsistence. In other words, their settlements lay in the very areas where the formative early Linear Pottery sites have been identified. This would again imply that the occupants of the early Linear Pottery settlements in the Balaton area were more likely the descendants of the indigenous Mesolithic groups than of the Balkanic immigrants.

Lithic raw material and stone tools

The next piece of indirect evidence is the source of the raw material used for the manufacture of lithics, the distribution of different types and the routes of its distribution, as well as the types in the tool-kit. It has already been mentioned in Chapter 8 that the raw material from the open mine at Szentgál–Tűzköveshegy in the Bakony Mountains was distributed over a rather extensive area in western Transdanubia. The same holds true for the Starčevo settlements in southern Transdanubia: the immigrant Balkanic groups too used rocks from the Szentgál mine for the manufacture of their tools.[99] The lithic finds from Vörs clearly illustrate that no matter what type of raw material was used in the original homeland – on the settlements in Slavonia and northern Croatia – once the immigrants had settled in Transdanubia, they made use of the available local rock types, and they especially favoured Szentgál radiolarite. This rock type also dominates the lithic samples from the early Linear Pottery sites: aside from Pityerdomb, Szentgál radiolarite was used at Gellénháza and Andráshida–Gébárti-tó, as well as on the early sites around Lake Balaton and in the Vázsony Basin.

It is noteworthy that the stone raw material from the Balaton Uplands and the Bakony Mountains – Szentgál radiolarite and red Permian sandstone from the mountains girding the northern shore – also appears on the early Linear Pottery sites along the southern shore of the lake.

Since the late Mesolithic stone implements from southern Transdanubia published by J. Pusztai have not been sourced, their provenance remains unknown. A recent study has demonstrated that the lithic finds from Kasposhomok were predominantly made from Szentgál flint.[100] It is to be hoped that the source of the raw materials used for the manufacture of the stone tools and implements from these early sites will also be determined, even more so since a major lithic assemblage from the Mesolithic, also made from Szentgál radiolarite, has been found in the area.[101] We know little about the raw materials used by the southern Transdanubian Starčevo communities. The examination of the chipped stone implements from the Starčevo settlement at Slavonski Brod in the collection of the Department of Archaeology at Zagreb University has revealed that one of the implements was made from Szentgál radiolarite. Katalin T. Biró, who examined the finds, suggested that Szentgál radiolarite resembled the brick-red radiolarite of the Bosnian mines, this being the reason that the northward migrating Starčevo communities preferred this Transdanubian raw material.[102]

One of the early Linear Pottery sites at Balatonszemes yielded an impressive cache of worked cores; these rocks had apparently been hoarded for later processing.[103] A unique find, a 'ham shaped'

[99] *Bácskay–Simán* (1987); *T. Biró* (1988); *T. Biró* (1998); *T. Biró–H. Simon* (2003). The number of lithic finds from Starčevo sites is rather low. Only polished stone implements were found at Babarc: *Bánffy* (2001).

[100] *Marton* (2003).

[101] The finds are currently studied and evaluated by R. Kertész. The analysis of the raw materials used for the manufacture of the lithic finds from Transdanubia, combined with new field surveys, is planned for 2003. I would here like to thank R. Kertész and T. Marton for sharing this information with me.

[102] www.ace.hu/igcp442/slavbrod.html. I would here like to thank Katalin T. Biró for pointing this out to me.

[103] Péter Gergely Németh's excavation. The raw material analysis was performed by Katalin T. Biró.

core was brought to light at the early Linear Pottery settlement investigated at Balatonszemes–Bagódomb.[104] This core, one of the most impressive of its kind among the prehistoric cores from the Carpathian Basin owing to its size and weight (3.5 kg),[105] too came from Szentgál–Tűzköves. This find also indicates that it was the raw material itself and semi-finished products that were traded and that tools from the various raw materials were manufactured locally, on the settlements – an observation confirmed also by the lithic finds from Pityerdomb.

Red radiolarite from Szentgál was a major raw material not only in the Early Neolithic of Transdanubia. Its occurrence beyond western Transdanubia and the northern, western and southern shores of Lake Balaton indicates that it was used in more northwesterly regions too.[106]

The finds of Szentgál radiolarite on Lower Austrian, Moravian and German sites do not represent the earliest occurrences of this raw material. D. Gronenborn has convincingly argued that imports of shell reflected a long-distance trade between the Carpathian Basin and other regions of Central Europe well before the Neolithic.[107] The examination of the lithic finds from three Mesolithic sites in southern Moravia revealed that some had been made from Szentgál radiolarite! The distance of Smolín, Pribice and Dolní Vestonice from the mine in the Bakony Mountains was some 230 km.[108] Assuming that the long-distance routes leading northwest through the Danube Valley had evolved well before the spread of Neolithic innovations, it is hardly surprising that the early Linear Pottery groups advanced many hundreds of kilometres as quickly as they did or that Szentgál radiolarite reached faraway regions.

The imports of Szentgál radiolarite on southern Transdanubian and Moravian Mesolithic sites also provides evidence for the date when the mine began to be exploited since it indicates that indigenous groups had discovered, quarried and transported the raw material from the Szentgál site before the advent of the Neolithic, or at least by the late 7th Millennium BC. This piece of evidence would have greatly pleased Gy. Mészáros since it indirectly confirmed his opinion, proposed in 1948, that the Mesolithic type chipped stone implements found in the Szentgál area, in the Balaton Uplands and in the Vázsony Basin can be regarded as the legacy of local Mesolithic hunters.[109]

The proportion of Szentgál radiolarite among the lithic finds from the Brunn II settlement near Vienna was around 75 per cent.[110] At Neckenmarkt in the Burgenland, some 97 per cent of the stone tools had been manufactured from this raw material.[111] Brunn lies about as far from Szentgál as Pityerdomb. The early Linear Pottery settlements at Rosenburg and Strögen, where Szentgál imports accounted for about one-half of the stone tools, lie at a distance of roughly 230 km from the mine.[112] Vedrovice and Kladniky, two sites in Moravia where Szentgál imports were identified, lie at a distance of roughly 245 km and 300 km respectively.[113] The early Linear Pottery settlements at Schwanfeld near Würzburg, Eilsleben in the Saale region and Bruchenbrücken in Hessen all yielded tools made from Szentgál radiolarite. The distance of these sites from the mine is around 1000 km. Even though the ratio of Szentgál radiolarite among the lithics from the latter sites, lying at an enormous distance from the mine by Neolithic standards, was very low, A. Zimmermann and

[104] Viktória Kiss' excavation. The lithic finds were evaluated by Katalin T. Biró. Cp. *T. Biró* (2001b).

[105] Litotheca database, Hungarian National Museum. *Biró–Dobosi* (1991).

[106] *T. Biró* (1988) *Fig. 5.*

[107] *Gronenborn* (1994) 139.

[108] *Mateiciucová* (2001) 285–287; *idem* (2002) Map 1.

[109] K. T. Biró and J. Regenye too support this view, the implication being that the Szentgál mine was exploited already during the Mesolithic. *Biró–Regenye* (1991) 348–349; *Gronenborn* (1999) 168.

[110] *Lenneis* (1995); *Mateiciucová* (2001) 289; *idem* (2002).

[111] *Lenneis* (2002 (2001)) 181–182; *Gronenborn* (1997); *idem* (1999) 168; *idem* (2001 [2002]) 249–257.

[112] *Mateiciucová* (2001) 290, 292.

[113] *Mateiciucová* (2001) 290; *idem* (2002b) 232–233

D. Gronenborn have aptly noted that even one single stone implement from Transdanubia found on the Aldenhovener Platte means that it was taken there by people.[114]

The well-documented evidence for long-distance contacts shows an interesting contrast with the fact that the distribution of lithic finds indicates sparse contact with the contemporary groups in the Great Hungarian Plain and the eastern and northeastern regions of the Carpathian Basin. Contact with the north appears to have been almost non-existent. Tokaj obsidian has been found at the Budapest–Aranyhegyi Road–Mocsáros site. In addition to documenting contact with the east, the significance of this find lies in the fact that, similarly to the Szentgál–Tűzköves mine, the Tokaj region itself lay beyond the area controlled by communities using this raw material. The proportion of Szentgál radiolarite among the lithic finds from this site is rather low.[115] The stone finds from two recently investigated early Alföld Linear Pottery (Szatmár II) sites shows a similar picture. The stone tools found at Mezőkövesd–Szentistván-Mocsolyás and Füzesabony–Gubakút were predominantly manufactured from Tokaj obsidian and limnoquartzite from the Mátra Mountains. In addition to a few imports from Szentgál, lithic raw material from the region beyond the Carpathians was also identified.[116]

The lithic sample from the early Linear Pottery site at Szentlőrinc–Téglagyár in Baranya county also included obsidian. It seems likely that obsidian was transported to this site through the southern part of the Great Hungarian Plain with the mediation of one of the early settlements in the Baja region. The investigation of the early and later Linear Pottery settlement near Fajsz will hopefully prove to be a key site in this respect since together with import finds from the Tisza region and the southern part of the Great Hungarian Plain, Szentgál radiolarite and other raw materials from the Mecsek Mountains, as well as Tokaj obsidian were collected during the intensive field surveys. The surface finds also indicated the strong cultural impact of the Vinča complex.[117] The investigations in this area will hopefully clarify the nature of the regional differences between Transdanubia and the Great Hungarian Plain in the earlier Neolithic, as well as of contacts between the two regions and the occasional breaks in the contact systems.

The typological analysis of the lithic finds provides yet another perspective to the issues examined here. When analyzing the lithic assemblage from a particular Early Neolithic site, one of the main issues was whether there was a continuity with the earlier Mesolithic tradition or whether a break could be observed between the two.

In a typological analysis of the chipped stone implements from Germany, W. Taute noted a definite continuity between the Mesolithic and Neolithic tools.[118] St. Kozłowski arrived at a similar conclusion regarding the stone tools from South-East Europe.[119] Modifying her earlier views, R. Tringham now believes that a continuity can be assumed between the Neolithic and the preceding population in the Danube Gorges – an opinion based on the similarities between the tool types used by the two groups.[120] A Mesolithic–Neolithic continuity could be established as regards the lithic assemblages from the Starčevo site at Tečić.[121] Geometric microliths resembling the ones used in the Mesolithic of the Greek mainland and Melian obsidian were found in the Northern Sporades and similar extensive contact networks from the pre-Neolithic period could be demonstrated at Franchthi in southern Greece. The pre-Neolithic routes and long-distance networks apparently survived into the Neolithic.[122]

[114] *Zimmermann* (1988); *idem* (1995) 7–8; *Gronenborn* (1999). A. Tillmann and D. Gronenborn first voiced this opinion in the debate following my lecture on the Pityerdomb settlement held in May, 1999 at Heidelberg.

[115] *Kaczanowska* (2001) 217.

[116] *T. Biró* (2001a) 90–91.

[117] In M. Kaczanowska's view the lithic industry of the developed Linear Pottery culture of the Carpathian Basin reflects many Vinča traits. *Kaczanowska* (2001) 209.

[118] *Taute* (1974); *idem* (1980).

[119] *Kozłowski* (1987) 18.

[120] *Tringham* (1971); *Tringham–Voytek* (1989).

[121] *Galović* (1962).

[122] *Sampson–Kozłowski–Kaczanowska* (1998) 132–133; *Démoules–Perlès* (1993) 383–384.

The striking similarities in the stone tools indicated that the Mesolithic communities of the Janisławice culture maintained contact with the early farmers north of the Carpathians.[123] Chocolate flint remained a popular raw material and geometric microliths too continued to be manufactured and used in the Early Neolithic.[124] Contact between the Mesolithic and the Neolithic could also be documented further to the east, in Little Poland and at the Glăvăneşti Vechi site, lying beyond the Eastern Carpathians, with the mediation of the Bug–Dniester culture in the latter case.[125] A. Păunescu has pointed out that no break can be observed between the pre-Neolithic tools and the early Neolithic technocomplex in Romania.[126]

A possible link can only be assumed on the early sites in Lower Austria – it cannot be confirmed in the lack of lithic finds.[127] As regards the Moravian sites, I. Mateiciucová is inclined to accept D. Gronenborn's view that indigenous hunter-gatherer groups mixed with the immigrant farming population (indicated by the survival of microliths into the Neolithic), even though she does not claim to have found the link in spite of the many similarities in the patterns of raw material usage.[128] In Central Europe, the analysis of lithic types from Eilsleben and Bruchenbrücken indicated a link between the Mesolithic and the Neolithic and the same probably holds true for the settlements on the Aldenhovener Platte.[129]

M. Kaczanowska has demonstrated that the more distant a site from the assumed area where the Linear Pottery emerged, the greater and the more certain the role of the indigenous Mesolithic population in the transition to the Neolithic. She distinguished three regions where an interaction between the Mesolithic and the Neolithic groups can be assumed: Little Poland and the Upper Vistula region, southern Moravia and Transdanubia.[130] Neither southern Moravia, nor Transdanubia can be regarded as regions lying far from the area where the Linear Pottery culture evolved.

The stone tools from the early Linear Pottery sites in Hungary are microliths, with the trapezoidal blades resembling the ones of the late Mesolithic.[131] Owing to the low number of authentic and well-documented assemblages, only preliminary findings were available until quite recently. In her doctoral dissertation on the earliest Neolithic chipped stone implements, E. Bácskay could only speculate at the most; at the time she believed that contact between the Mesolithic and the Neolithic could only be assumed in the Bükk distribution.[132] K. T. Biró has argued that there was a definite link between the stray Mesolithic finds from the Vázsony Basin and the more recently analyzed late Starčevo and early Linear Pottery lithic assemblages. She distinguished two distinct tool-kits among the early Linear Pottery finds: the classical (Keszthely phase) Linear Pottery tool-kits characterizing the classical phase were rather humble, made up mostly of end-scrapers and sickle blades, reflecting a subsistence based on agriculture, while the early Linear Pottery tool-kit was far more varied, resembling the late Mesolithic assemblages containing tools suited to a wider range of activities. Accepting J. Kozłowski's assumption on the existence of a pre-Neolithic lithic horizon in the Carpathian Basin, K. T. Biró concluded that the lifeways of the early Linear Pottery communities showed a greater diversity than that of the later groups.[133] The similarities between the lithic types of the Mesolithic and the early Linear Pottery phase would suggest that the subsistence of the sedentary groups of the Early Neolithic was not based on crop cultivation alone, and that hunting, fishing and gathering continued to play an important role.

[123] *Domanska* (1989).
[124] *Balzer* (1987) 346–348.
[125] *Kaczanowska* (2001) 220.
[126] *Păunescu* (1987) 92.
[127] *Lenneis* (2001).
[128] *Mateiciucová* (2001); *idem* (2002a); *Gronenborn* (1990); *idem* (1994); *idem* (1999).
[129] *Kaczanowska* (1990); *Gronenborn* (1997); *Zimmermann* (1988).
[130] *Kaczanowska* (2001) 219.
[131] *T. Biró* (1987); *idem* (2001a).
[132] *Bácskay* (1976).
[133] *T. Biró* (2001a); *idem* (2002).

The wide range of lithic types is certainly a reflection of this diversity. The fact that a more simple tool-kit based essentially on sickle blades characterized the classical Linear Pottery phase indicates that the other tool types were no longer needed and that crop cultivation became the main basis of the economy. This transformation more or less coincided with the period when the settlements in the lacustrine, marshland environment were abandoned and their occupants moved to the more fertile, loessy hills and ridges.

E. Starnini drew an essentially similar picture of the early Neolithic lithic types in her study based on the examination of various Hungarian assemblages and her personal familiarity with the relevant sites. The analysis of the early Neolithic stone finds from Méhtelek in the eastern part of the Great Hungarian Plain indicated that the tool-kit made up of a wide range of different types reflected a mixed economy based on horticulture in a small area, probably around the houses, gathering, hunting, a minimal plant cultivation and a few domestic animals. The polished stone implements were, in her opinion, more suited to woodworking around the house than to extensive forest clearing activities.[134] Starnini emphasized the importance of the settlements' location near water in this economy[135] and, also, that there were virtually no difference between the subsistence patterns and lifeways of the Late Mesolithic and the Early Neolithic in the Great Hungarian Plain.[136]

The above seem to be valid for the Early Neolithic transformation in the Balaton area and western Transdanubia. As a matter of fact, a dual process can be noted. The indigenous population groups with their Mesolithic lifestyle adopted crop cultivation, the domestication of animals and the manufacture of pottery together with various other Neolithic innovations. The finds from Pityerdomb and the other western Transdanubian sites suggest that this process of adoption lasted for a rather long time. On the other hand, the immigrant Starčevo groups learnt to adapt to the new, significantly different temperate climate. Their settlements in the radically new environment among unusual climatic conditions indicate that these Starčevo communities were remarkably flexible when settling on marshland islets, among waterlogged sedge-marshes in a cool, wet, almost sub-Alpine climate. This dual adaptation[137] is one of the most distinctive features of the western Transdanubian frontier.

Even though there is less information from the western area, the currently available evidence indicates that the parallel is valid: immigrant Starčevo groups and indigenous hunter-gatherer communities, who began the gradual shift to sedentism while still retaining their earlier lifestyle, populated this area in the early Linear Pottery period. The Linear Pottery culture that soon colonized distant regions of Europe emerged from these two populations.

Transport, waterways and long-distance routes

The final question that needs to be explored is how these 6th Millennium communities travelled many hundreds of kilometres – in other words, the available evidence for communications routes and transportation.

A glance at the map reveals that the north to south dissectedness of Transdanubia was complemented by a number of rivers flowing north toward the Rába and Danube valley. These river valleys obviously provide an eloquent answer to the question of communication routes. However, two issues, discussed briefly in the above, nonetheless warrant a closer examination of the problem of transport and communication. The first is how various lithic raw materials reached distant regions;

[134] *Starnini* (2000) 211.
[135] *Starnini* (1994); *idem* (2000); *idem* (2001).
[136] *Starnini* (2000) 215.
[137] *Sümegi–Kertész* (2001) 412–414.

the second, the early settlements' proximity to water, especially in the area of Lake Balaton, the largest body of water in Central Europe.

Prehistoric man's conquest of the sea was undoubtedly an act of great courage; there is evidence for seafaring between the Greek mainland and the islands of the eastern Mediterranean from the 9th Millennium, reflected in the widespread distribution of Melian obsidian.[138] The inland river valleys obviously offered better and more attractive conditions than the regions lying far from water: these valleys were generally more open than the woodland areas, often with good points for orientation and no need to climb high mountains since rivers usually found natural passes in mountain areas, not to speak of the plentiful supply of drinking water available to travellers. It must also be borne in mind that the micro-climate in river valleys is generally more pleasant compared to other regions, their temperature is more favourable and their more open vegetation cover too made them obvious channels of communication. The "green corridors" theory proposed by R. Kertész and P. Sümegi is based on these favourable phenomena.[139] It seems rather obvious that various communities established and maintained contact with each other through river valleys.

The river itself too provided an excellent opportunity for travel. In his study on Neolithic water travel, O. Höckmann noted that water crafts can be regarded as one of the most significant early achievements, being the first major means of overcoming distance.[140] The creation of the first water crafts predated the domestication of animals and the exploitation of their draught power. The earliest boat find in temperate Europe comes from the North Sea and dates from the 9th Millennium BC. The bone rib of a hide-covered boat was found at Husum, on the western coast of the Schleswig-Holstein peninsula.[141] Wood was plentiful in the forested mainland and the Mesolithic boats from Western and Northern Europe were usually made from a single trunk. According to O. Höckmann, these boats may well have been hollowed out with burning since massive stone axes were unknown in this period. The boats found at Noyen-sur-Seine in France and Tybrind in Denmark had a rounded bottom.[142] Flat-bottomed boats were used in the inland areas well before the advent of the Neolithic. The earliest Mesolithic boat with a flat bottom was found in Halsskov, also in Denmark; Höckmann assigned the majority Early and Middle Neolithic clay boat models with a flat bottom from South-East Europe to this type.[143] Interestingly enough, Höckmann argued that the boat used by the Linear Pottery communities, the first European travellers to cover great distances, was not a boat of this type, but a coracle made from hides stretched over a wicker frame, a conclusion drawn from his interpretation of the clay models (described as curdling vessels) from Battonya, Rakamaz–Tímár and Tiszadob.[144] One of his main arguments was that communities that were capable of digging deep wells lined with thick wooden beams, calling for highly specialized carpentry skills,[145] were no doubt in command of the necessary expertise for hollowing out tree trunks with their polished stone implements. To which we may add that the preparation of the wooden lining of a well must have been child's play compared to the carpentering of the massive posts and the elaborate roofing of the often 20–30 m long longhouses!

Paddle finds too attest that waterways were navigated during the Mesolithic. Ten different paddle types could be distinguished according to a study listing the finds of this type from northern Germany: they included round, angular, heart shaped, long leaf shaped and spear shaped paddles, whose use can be attested until the Late Neolithic.[146] It seems likely that the different paddle

[138] *Perlès* (1979); *Cherry* (1981); *Höckmann* (1985b) 9–10; *Kourtessi–Philippakis* (1990); *Balkan-Atli et al.* (1999).

[139] *Kertész–Sümegi* (1999); *eadem* (2001); *Sümegi–Kertész–Hertelendi* (2002), 176.

[140] *Höckmann* (1996) 25.

[141] *Ellmers* (1982).

[142] *Höckmann* (1996) 27–28.

[143] *Höckmann* (1996) 28–31; cp. also *Marangou* (1991).

[144] *Höckmann* (1996) 40.

[145] Such as the wells found at Schletz in Austria, at Mohelnice in Moravia and at Erkelenz–Kückhoven in Germany. *Windl* (1994); *Tichý* (1972); *Weiner* (1992); *idem* (1998).

[146] *Hartz–Lübke* (1999).

types were used in different boat types. The long, streamlined boats hollowed out from a single trunk could be directed more easily and a squat paddle whose form and large surface enabled rapid progression, was sufficient for boats of this type. Navigation with round, flat based boats was probably more difficult: the long, spear shaped paddles probably also functioned as rudders. The fact that most of these paddle types survived until the Late Neolithic would imply that the different boat types too remained in use up to that time. It has also been suggested that waterways were mainly navigated during the summer months in Central Europe, although some were also used for travel in winter, when most lakes and even some of the rivers froze. G. M. Burov reconstructed different types of skates and runners from wood remains, noting that these were the most efficient means of travelling along waterways in forested regions.[147]

Beside the river network, western Transdanubia is dominated by a huge lake whose extent in the Early Neolithic was even larger than its present one. The dense settlement in the marshland along the shores of Lake Balaton makes it almost certain that the indigenous hunter communities and the immigrant Starčevo groups had navigated the lake.

The rescue excavations preceding the motorway construction on the outskirts of Balatonszemes brought to light the large core of Szentgál radiolarite mentioned in the above. A heap of Permian red sandstone blocks, the characteristic rock of the Balaton Uplands, was also found in the area.[148] Looking northward from Balatonszemes, one can see the mountains of this red rock. A line drawn across the map towards the Bakony Mountains touches Szentgál. It is therefore almost unimaginable that the huge core and the blocks of red sandstone weighing several tons had been transported to this site on a land route skirting the lake, involving a detour of some 60 km, rather than across the lake. The genuine Starčevo pottery found at Tihany–Apáti too indicates contact between the two areas. A similar assemblage, found recently near Balatonlelle on the southern shore of the lake, indicates the presence of Starčevo groups in this area.[149] The distance between the Tihany peninsula and the southern shore is barely 1.5 km, suggesting that the family or small group settling at Apáti arrived there by boat.

Aside from the already mentioned boat found at Keszthely, the remains of other boats are known both from the Mesolithic and the Starčevo culture. One of these, dated between 8130-7670 calBC (2nd sigma), was retrieved from the Mura River.[150] The boat hollowed from a tree trunk, now exhibited in the municipal museum of Slavonski Brod, was found in the dried-up bed of the Bić River, north of the Drava. K. Minichreiter dated this boat to 6000 BC and suggested that it had probably been used by the occupants of the nearby Starčevo settlement at Zadubravlje.[151]

It is thus hardly surprising that most Early Neolithic settlements in western and northern Transdanubia lie in the immediate vicinity of rivers, on islets rising above the floodplain, on the lower river terraces and river banks and, later, on the loess hills flanking the rivers. The location of these early Linear Pottery settlements suggests that local and regional contact networks were in all likelihood created and maintained along the Torna Stream, the Marcal, Zala and Rába Rivers and the natural routes provided by their valleys. After reaching the Danube, these early groups migrated north and west along its valley. They moved northwards from the Little Hungarian Plain and the Austrian section of the Danube as shown by the "*Siedlungskammer*" type settlement clusters in southwest Slovakia, Moravia and Lower Austria. The Prague area, Little Poland and the Elbe–Saale region was colonized by groups migrating even further. The migration of early

[147] *Burov* (1999).

[148] *T. Biró* (2001b).

[149] T. Marton's kind personal communication.

[150] M. Budja kindly told me about this boat find. *M. Eric:* Nova datiranja deblakovja colnov. Arheo 16 (1994) 74-78 (non vidi). I am indebted to M. Budja for sharing this information with me.

[151] *Minichreiter* (1997b) 217.

Linear Pottery groups from Transdanubia (and their regional contacts) can be traced mainly in the Danube Valley. It has been argued that the northern and northeastern Alpine range acted as a barrier to the spread of Neolithization from Transdanubia in that direction. This would explain the nature and the intensity of the contact between Transdanubia and central Germany for the following three or four generations.

Is it possible that these routes were discovered and maintained by pioneering Linear Pottery groups? The answer is obviously no. The imports of Szentgál lithic raw material and southern shells found on Mesolithic sites in Moravia and Germany most certainly challenges any assumption of this sort. It seems quite likely that the Linear Pottery communities did not venture into a wholly unknown terrain, but were more or less aware of what awaited them in the northwest. From the published finds and my personal examination of various assemblages, it seems to me that the early sites around Nitra (Nyitra) in Slovakia, the Brunn II settlement near Vienna and the early Linear Pottery sites in Lower Austria should not be interpreted as settlements and the archaeological legacy of immigrant Linear Pottery groups,[152] but rather as the settlements of the indigenous population who came into contact with the immigrants, from whom they adopted various Neolithic innovations which they then developed according to their own needs. This assumption is confirmed by examples to the contrary. The finds recovered from the Bad Nauheim–Niedermörlen site in the Wetterau area suggests that its occupants had either migrated there from Transdanubia or had at least maintained regular contact with their relatives there.[153]

This allows two conclusions. First, it seems likely that the early Linear Pottery groups migrating westward from the Balaton area and western Transdanubia used both the river valley and the river itself for travel. Second, the available evidence suggests that these routes had already evolved by the time the Linear Pottery groups began to use them and that they were used since the late Mesolithic. The Linear Pottery groups no doubt learnt about these routes and the groups living along these routes from the indigenous population. Alternately, we may also assume that the groups migrating to the heartland of Central Europe were not of purely Balkanic stock, members of the groups who transplanted the Starčevo culture to Transdanubia, but came from a population that emerged from the blend of Starčevo groups and indigenous Mesolithic people. In other words, the migrants to the west could well have included hunter-gatherers – or their descendants – who were familiar with these routes and with the western communities living along the Danube.

The mixing between the two populations, the existence of trade contacts and the use of Mesolithic routes indicates that the contact between the two groups was essentially peaceful in nature. The relatively late date of the Pityerdomb settlement and its contemporaneity with the Vörs site suggests that this process was a long one, lasting from 5500 to 5350. The first migrants to the west may have left at a time when the mixing between the two populations was still underway in central Transdanubia, a possibility confirmed by the early date of the settlements in the Nitra (Nyitra) area and of the sites at Brunn, Eilsleben and elsewhere in Germany.

[152] *Pavúk* (1976); *idem* (1980); *idem* (1994); *idem* (1996); *Lenneis* (1995); *idem* (2001); *Stadler* (1999). I would here like to thank E. Lenneis and P. Stadler for their kind permission allowing me to study the early Linear Pottery find assemblages.

[153] *Schade-Lindig* (2002a); *idem* (2002b). Cp. Chapter 10 for a possible explanation of this phenomenon.

Chapter 10

THE ROLE OF TRANSDANUBIA IN THE EMERGENCE OF THE CENTRAL EUROPEAN NEOLITHIC

The salient features of the Neolithic transition in western Transdanubia (Summary)

Twenty years of researching the Neolithic of Transdanubia and the findings of three micro-region research projects have convinced me that western Transdanubia and the Balaton region were part of a frontier zone in the mid-6th millennium BC, the setting of the long interaction between indigenous hunter-gatherer groups and immigrant Starčevo communities from the south. Adaptation to the changed circumstances was both an option and a bitter necessity for each. The adaptation to the cool and wet Alpine-Atlantic climate of Transdanubia with is heavy snows in winter must have posed a serious challenge to the Balkanic immigrants. Pityerdomb and Gellénháza, and perhaps Brunn II near Vienna, whose finds are rooted in the Starčevo tradition, indicate that they were capable of adapting. A few Starčevo groups also settled in the marshland lining Lake Balaton and on islets in the marshland, in an environment that meant a similar challenge. The settlements at Vörs–Máriaasszonysziget, Balatonlelle and Tihany–Apáti reflect this different type of adaptation.

The indigenous (late Mesolithic) groups too found themselves under wholly new circumstances in the mid-6th Millennium. The wetter climate and the rise of the lake's water level meant that they were forced to move away from the shore. Their horticulture was expanded with the cultivation of domestic plants after their interaction with Starčevo groups, and they also began to copy the immigrants' vessels. The result of the interaction between the two groups was the emergence of a genetically mixed population that soon colonized northern Transdanubia along the Marcal, Rába and Danube Valleys, and later migrated farther along the Danube to eastern Austria, southwestern Slovakia, southern Moravia and the heartland of Central Europe, where they played an active role in the transplantation of a sedentary, food-producing lifestyle.

In the previous chapters I have discussed in detail the evidence supporting the above hypothesis and I will here only briefly recapitulate the main points. I took as a starting point four categories of direct and six categories of indirect evidence, all of which confirm the above hypothesis. I must also emphasize that the indirect evidence seems slightly more convincing to me.

The direct evidence

(1) *The presence of Mesolithic tools types.* Microlithic trapezes and other types of the late Mesolithic tool-kit, collected during field surveys, have since long been known. Their dating, based on their typological traits, was not challenged either by Gy. Mészáros and J. Pusztai, who published the finds, or by V. T. Dobosi, K. T. Biró, R. Kertész and T. Marton, all of whom examined the lithics in question. The Kapos Valley and the Vázsony Basin, lying north of Lake Balaton near the Szentgál mine, are especially rich in finds of this type. The stone tools examined to date were all made from red radiolarite from the Bakony Mountains.

(2) *Pollen data.* The pollen profiles for the Balaton basin and the marshland of the Little Balaton region indicate that there was a sudden increase of hazel in the mid-6th century BC and that over one-half, 55 per cent of the ligneous species was hazel around 5600 calBC, i.e. in the period immediately preceding the Linear Pottery culture. Botanical analyses have shown that southwestern Transdanubia was a hazel refugium during the last glaciation and that it spread to other parts of the Carpathian Basin from this area. Still, the sudden, large-scale expansion of the species can hardly be explained without assuming an active human manipulation of the environment. It seems likely that the growth of hazel was encouraged by forest clearance, by the creation of small clearings where this warmth-loving species yielding storable fruit with a high nutritional value could thrive. A comparison of the frequencies of hazel and cereals in the pollen diagrams is most instructive: the two are inversely proportional. The increase of cereal pollens is accompanied by the decline of hazel in the sediments.

(3) *Pre-Neolithic forest burning.* Traces of pre-Neolithic forest clearing and forest burning were observed at Szentgyörgyvölgy, near the Pityerdomb site. The soil samples taken from the waterlogged, marshy banks of the Szentgyörgy Stream flowing by the site indicated intentional forest burning around 8771 BP (7936–7821 calBC). The burnt organic matter and the small-scale erosion in the area suggest that forest burning was repeated fairly often, about every 15–30 years.

(4) *Pre-Neolithic boat find.* The coracle found near Keszthely, in an area formerly covered with water that later became marshland, unfortunately perished and could not be examined. The pedological and botanical analyses have convincingly proven that the area had become eutrophic before the onset of the Neolithic; the boat was no doubt used at a time, when the shoreline ran in that area, presumably still in the Mesolithic.

The indirect evidence

(1) *Changes in the water level of Lake Balaton in the 6th Millennium BC.* The sedimentological and palynological analyses confirmed the observation based on satellite photos: the water level and the shoreline of the lake changed considerably in certain periods. In some periods, the lake broke into two or three smaller lakes with clear, cold water; when the climate turned warmer and wetter, the natural dams were breached and even the northern Tapolca Basin became part of the lake. During these periods, the lake flooded the north to south valleys to its south down to the Kapos River, occasionally as far as the Drava Valley.[1] The lakeshore was lined with marshland even in drier periods – in the Roman Age, for example, the road led along the side of Badacsony since it was unsafe to construct it closer to the lake. The water level of the lake was fairly low at the close of the Mesolithic, rising significantly around 5500–5400 calBC.

It follows from the above that the one-time late Mesolithic settlements along the lakeshore are now all submerged. A closer look at the location of the earliest Neolithic sites around the lake reveals that they lie directly along the changed shoreline of the period when the water level was higher than the present one, in the marshland or on islets in the marshland. This settlement patterns broadly corresponds to the Mesolithic one. These settlements all lay in close proximity to the water, in areas that were unsuited to agriculture. It is therefore possible that the majority of the sixty-five settlements lying directly on the shore in the marshland had in fact been occupied by adapting Mesolithic hunter-fisher communities and that smaller groups of the Balkanic immigrants chose to settle in this area under their influence. If this was indeed the case, a part of the "lost" Mesolithic population has been found. This scenario also implies that the relations between the Starčevo groups and the indigenous population were essentially peaceful.

[1] *Cserny* (1992–93 [1999]).

(2) *Starčevo pottery and its local imitation.* Significant differences can be noted between the pottery assemblages from the late Starčevo settlements in western Transdanubia and the Balaton region, and those from southern Transdanubian and more southerly sites. This difference, reflected in the finds from Szentgyörgyvölgy–Pityerdomb and a number of other settlements, can most likely be attributed to the cultural impact of the indigenous hunter-gatherer groups.

(3) *Different species of domestic plants and the low number of plant remains.* In spite of the fact that the settlements lay in an environment that was unsuited to cultivation, the macrobotanical finds from the earliest phase indicate a surprising variety of species. In addition to einkorn (*Triticum monococcum*) and spelt (*Triticum diococcum*), the samples from Pityerdomb included common wheat (*Triticum aestivum*) and barley (*Hordeum vulgare*), as well as edible goosefoot (*Chenopodium album*). The number of remains was low for each species, never exceeding twenty specimens. This would suggest that the extent of cultivation in western Transdanubia and the Balaton region did not exceed that of Mesolithic horticulture – the range of plants cultivated and tended in the open areas between the houses and in the narrow zone along the shore was simply broadened with the species adopted from the Starčevo communities together with the art of cultivation. Although the introduction of domestic cereals brought a *qualitative* change, this did not lead to a *quantitative* change in this formative Neolithic phase, especially as regards lifeways.

(4) *"Neolithic revolution" – one phase later.* The above assumption is confirmed by the observation that the shift to food-production did take place, although not in the earliest Linear Pottery phase, but at the beginning of the classical phase, known as the Keszthely phase in Transdanubia. The location of the sites indicates that they no longer lay directly by the lakeshore, but slightly higher, on the terraces and hills overlooking the rivers and lakes, and that fertile loessy areas were chosen for settlement. One case in point is the Marcal Valley, extending from the Balaton towards the Danube, where a dense network of Linear Pottery settlements from the Keszthely phase lay on the higher terraces. Although most of the macrobotanical data from this area are still unpublished, the pollen data clearly reflect a large-scale agricultural cultivation. This would suggest that in Transdanubia, the major change in lifeways and subsistence patterns occurred not at the beginning of the Neolithic, as earlier believed, but some three or four generations later.

(5) *The cult devices of the Starčevo culture and their local copies.* The examination and interpretation of the cult finds led to a similar conclusion. The appearance of the cult objects of the South-East European Neolithic in transitional assemblages, such as the one from Pityerdomb, and, later, of their copies, again indicates some form of interaction between the two populations. The animal (or human) headed altar fragment from Kéthely represents the same type as the Starčevo altar from Lánycsók, albeit it is a vastly inferior, poorly fired variant of the 'original'. The symbolization of the eyes with cereal grains can perhaps be taken to indicate that the indigenous population related positively to the Neolithic innovations and made efforts to adopt cereal cultivation. The foot fragment of a carefully modelled vessel resting on a human foot indicates a direct South-East European origin. A foot fragment from Balatonszentgyörgy comes from a similar vessel, although it was more carelessly made and is vastly inferior to the pottery of the Starčevo culture. There was no trace of the rich diversity of the Early Neolithic statuary of the Balkans either at Pityerdomb, or among the finds recovered from other early sites, or in the material collected during field surveys. This would suggest that some of the cult paraphernalia were adopted and used by the formative Linear Pottery communities, while others were discarded. Neither can we reject the possibility that certain elements of the cult inventory was adopted or copied for prestige reasons – as in the case of other Neolithic innovations – perhaps the reflection of an incipient social ranking in these indigenous communities. It is my belief that the local copies of cult objects and the drastic decline of statuary

can be explained by the cultural impact of the indigenous hunter-gatherer groups in the mixed population forming the early Linear Pottery communities.

(6) The survival of Mesolithic lifeways in the transitional period can be traced in the chipped stone inventory. The rich lithic assemblage found near Vöröstó and Mencshely, two Linear Pottery sites in the Vázsony Basin by the northern shore of Lake Balaton, represent the late Mesolithic Tardenoisien microlithic tradition. A closer examination of the stone artefacts revealed traces of sickle gloss on a few pieces. Three possible explanations can be cited: the sickle gloss can be attributed to their use in Mesolithic horticulture; the lithics came from an early Linear Pottery settlement preceding the occupation in the classical phase; or that the tools represent the survival of the rich Mesolithic tool-kit. According to K. T. Biró, the third possibility can be definitely ruled out, while the first two explanations are perhaps both valid simultaneously. In the first case, we can assume an indigenous group already familiar to some degree with Neolithic innovations, while the second would imply a mixed population whose subsistence was in part still based on hunting and fishing, this being the reason that the stone tools needed for these activities were still used. The rich Mesolithic tool-kit thus survived into the early Linear Pottery period. An interesting observation is that the disappearance of this tool-kit coincided with the changes in settlement patterns and subsistence at the beginning of the Keszthely phase – the very period when the occupants of the Transdanubian settlements began to use the more simple range of tools generally characterizing the Linear Pottery cultures, restricted to sickle blades and a few other types.[2]

Taken together, the different categories of evidence listed above all point in the direction that in the 6th Millennium BC, western Transdanubia and the Balaton region was a frontier, a contact zone between the indigenous Mesolithic population (of whom little is known) and the Balkanic Starčevo groups arriving from the south and the southeast *(Fig. 174)*. The geographic and ecologic conditions of the region undoubtedly played a role in the emergence of this frontier. The proximity of the Alps probably attracted Mesolithic groups to Transdanubia: the occupants of Pityerdomb and the other Linear Pottery settlements in the Kerka Valley no doubt included members of forager groups who inhabited the mountain valleys. This may have been one of the factors influencing the "*Siedlungskammer*"-like long settlement in the Kerka Valley.

The geographic conditions in western Transdanubia and Balaton region certainly favoured the emergence of a contact zone. The hilly region, the landscape dissected by rivers and the large lake, and especially the north–south dissectedness of the region all contributed to slow the process of immigration and colonization, and stimulated interaction with indigenous groups. The Balaton–Szentgotthárd line dividing Transdanubia can also be regarded as an ecological barrier – the Central European–Balkanic agro-ecological barrier, to use a newly-coined term.[3] Strong sub-Mediterranean influences, providing favourable habitats for Balkanic flora and fauna associations, can be noted south of this imaginary line, while mixed oceanic elements predominate to its north, with increasing continental elements to its east. The mosaic patterning of the environment in the Carpathian Basin, the refugiums preserving Carpathian and Illyrian elements, emerged at the close of the Quaternary. This mosaic patterning can be observed on the macro-, the mezo- and, most importantly, on the micro-level. Holocene profiles for which radiocarbon dates are available indicate that this mosaic patterning remained virtually unchanged until the shift to a production economy and that it was eventually destroyed by neolithization and the increasing human manipulation of the environment.[4] The changes are reflected in the entire floral and faunal spectrum, and they obviously influenced

[2] *T. Biró* (1991); *idem* (2001a); *idem* (2002a); *idem* (2002b).
[3] *Sümegi–Kertész* (2001) 412–414 and Fig. 5.
[4] *Sümegi–Krolopp–Rudner* (2002) 19–20.

the range of plants that could be successfully cultivated, as well as the range of domestic species that could be kept. The north–south dissectedness too contributed to the mosaic patterning of the ecosytem, in which the river valleys, the "green corridors"[5] played a key role, stimulating population movement and interaction between different groups.

The western Transdanubian region also satisfies the criteria that, according to the studies on the emergence and nature of frontier zones, are necessary for long-term interaction.[6] In these regions the exploitation of the environment became more intensive; the interacting groups occupied different positions on the wide scale of adaptation, ranging from simple co-existence to the exchange of various commodities, to the division of labour and intermarriage, as well as to full mixing. The appearance of social competitiveness – whether peaceful or not – is believed to have acted as a stimulus, rather than a restraint, to incipient social ranking.[7]

That the interaction between the two populations was rather intensive in western Transdanubia is reflected in the two-way adaptation and, especially, in the strikingly rapid adaptation of both population groups, indicated by the joint occurrence of late Starčevo and formative Linear Pottery elements, the appearance of imitation wares and, last but not least, in the wide distribution of Szentgál radiolarite, a kind of local 'hard currency'. The widespread occurrence of this lithic raw material provides indubitable evidence that the groups exploiting the Szentgál mine transported this commodity from the Drava region to the late Mesolithic settlements in southern Transdanubia, to the western Starčevo sites and the transitional settlements (Pityerdomb, Gellénháza), and to the late Mesolithic and Neolithic settlements in regions west of the Carpathian Basin. The use of this raw material by Starčevo groups well before the emergence of the Linear Pottery indicates that the Szentgál mine was not common property – the location of this important raw material source was not common knowledge and neither was it freely exploited by all groups. The mine and the routes, stream and river valleys leading to it were controlled by groups who traded this valuable rock for other useful commodities and important new knowledge, perhaps including cereal seeds and the young offspring of domestic animals.

It is perhaps too early to speculate on the different phases of interaction since, owing to the patchiness of the evidence on the Mesolithic, even the assumed interaction between the two populations contains a number of hypothetical elements. Still, the study of the Mesolithic–Neolithic interaction in Transdanubia will no doubt be very instructive once the body of available data increases. It is possible that the hunter-gatherer groups first only asked for various objects, vessels and foodstuffs made from cereals in exchange for the lithics. It is possible that the Neolithic innovations only proved attractive once the thought occurred to these indigenous groups that they too could make clay vessels, they too could experiment with retouching their stone tools, that they too might try sowing the seeds received from the newcomers, and that they too could master the art of house construction and try their hand it. What degree of co-operation is necessary for mastering the skills of house construction, sowing and harvesting or pottery making? The domestication of animals was probably the least difficult of these since the indigenous hunters were no doubt familiar with the behaviour of herds, including the behavioural patterns of female animals rearing their young, and they were also quite experienced in processing slaughtered animals. It is also quite possible that these hunter-gatherer groups participated in the local domestication of aurochs owing to their better knowledge of local conditions. These are some of

[5] *Kertész–Sümegi* (1999); *eadem* (2001).

[6] *Alexander* (1978); *Sherratt* (1982); *Vencl* (1986); *Bogucki* (1988); *Price–Brown* (1985); *Zvelebil* (1986); *idem* (1989); *idem* (2000); *Tillmann* (1993b); *Whittle* (1996); *Kind* (1998); *Gronenborn* (1990); *idem* (1998); *idem* (1999); *Bettinger* (2001); *Milisauskas* (2002).

[7] *Sahlins* (1972).

the phases described by social scientists and ethnologists studying group behaviour; it is to be hoped that prehistorians studying the neolithization of the Carpathian Basin will some day have sufficient evidence to raise and, more importantly, answer these questions.

The indigenous Mesolithic groups were clearly part of the mobile hunter-fisher-gatherer population whose stone tools and other remains have been found in the Vázsony Basin, in the Little Balaton region and in the Szentgyörgyvölgy area. The interaction between the two populations probably meant that the two distinct lifestyles and sets of values acted as a stimulus, while their mutual reliance on each other no doubt contributed to the minimalizaton of possible conflicts, promoting a peaceful co-existence or even joint occupation of settlements.

In the present study I have drawn together the different strands of evidence in order to construct a model describing how the mixing between the immigrant Starčevo groups and the indigenous hunter-gatherer population in western Transdanubia and the Balaton region led to the emergence of one branch of the Linear Pottery, whose groups soon reached the heartland of Central Europe along the Danube Valley, advancing as far as the Elbe–Saale region, the Munich Basin and southwestern Germany.[8] This rapid expansion would have been impossible without exploiting the bridgeheads and the regional contacts of the late Mesolithic. At the same time, a part of the mixed Transdanubian population remained where it was. Their possible contacts with the groups who had migrated westwards and northwestwards remains a task for future research.

It must also be borne in mind that the mixed economy of the earliest Linear Pottery groups can hardly be equated with a genuine Neolithic lifestyle. It seems to me that we can only speak of a real Neolithic lifestyle in western Transdanubia once the shift from extensive agriculture to an intensive one was achieved, and once the mixed economy, based on small-scale cultivation, fishing, hunting and gathering, was transformed into one based on food production: on cereal cultivation and the husbandry of domestic animals. The topographical, pedological, pollen and macrobotanical evidence indicates that this shift occurred at the beginning of the Keszthely phase, representing the classical Transdanubian Linear Pottery phase that can be dated to around 5250–5100 BC.

The transition to the Neolithic in South-East Europe – similarities and differences compared to the Transdanubian model

V. G. Childe described the beginning of the Neolithic as a fairly uniform process,[9] an opinion echoed by R. Braidwood, L. Binford and K. Flannery, the main protagonists of processual archaeology.[10] More recent research, however, has shown that there were many different modes of neolithization and that the smaller the geographic region examined, the more colourful the picture and the greater the diversity of the transition. The Carpathian Basin was until recently regarded as a uniform zone of neolithization; it is now clear that at least three different types of transitions can be distinguished in this region: one on the northern and northeastern fringes of the Körös distribution, one in the southern part of the Danube–Tisza Interfluve, where the impact of the formative Vinča culture must also be reckoned with, and yet another one in Transdanubia. The picture becomes even more complex if one specific area, Transdanubia is examined more closely. The transition to the Neolithic obviously differed in the Drava region where the Starčevo presence was very intensive, on the sandy islands, lying between the Danube branches, in the marshland around Lake Balaton, in the Rába Valley lying close to the Alpine foreland, in the northern Transdanubian Danube Valley and in the Little Hungarian Plain.

[8] This model – drawing heavily from N. Kalicz's research – was adopted by M. Zvelebil in his lecture held in September, 2002 in Thessalonica.

[9] *Childe* (1928); *idem* (1929); *idem* (1958).

[10] *Clark* (1952); *idem* (1965); *Braidwood* (1960); *Binford* (1968); *idem* (1971); *Flannery* (1973).

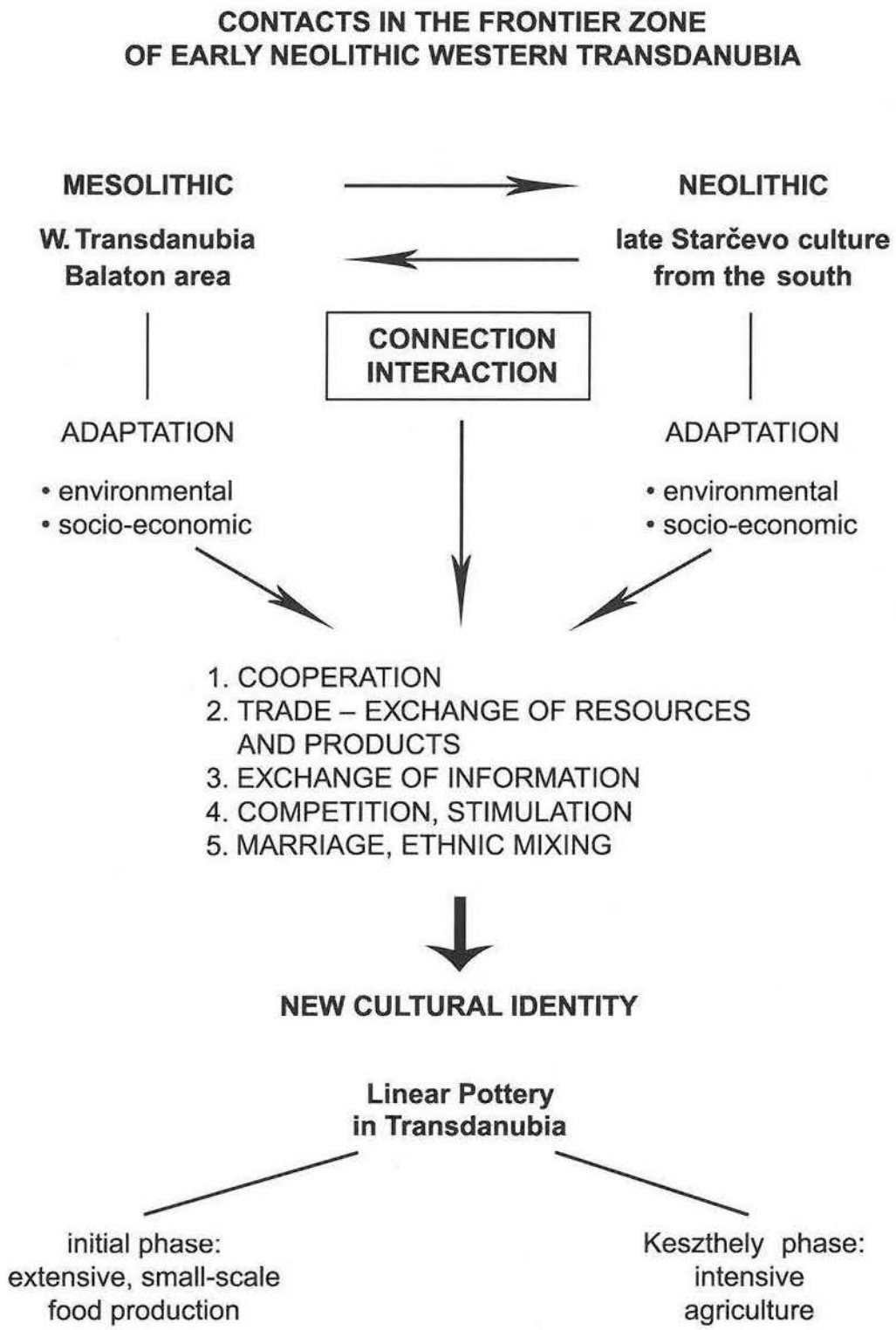


Fig. 174. Model of the Neolithic transition in western Transdanubia (after N. Kalicz, M. Zvelebil, E. Bánffy, R. Tringham)

The transition was influenced not only by geographic and ecological factors, but also by the lifeways of the indigenous and immigrant groups, their ability to adapt to new circumstances, the extent to which the two populations mixed and the nature of the contacts between them. In this sense, the transition to the Neolithic varied from region to region. One has the impression that the many different paths to neolithization can be likened to a carpet that appears to have a large, uniform pattern from afar, but can be seen to be made up of an intricate weave of tiny knots and colourful strands if examined more closely. A view from close up does not resemble the general pattern in each case. It is also quite obvious that the models constructed for larger areas are often less useful since they describe a uniform process and disregard the fact that individual river valleys, areas with dry loessy ridges, cool hilly regions all played a differing role in neolithization and that there may have been micro-areas that diverged from the general pattern. P. Sümegi and R. Kertész had similar considerations in mind when they spoke of the mosaic patterning of the environment.[11] R. Tringham too found the idea of a mosaic attractive and spoke of the mosaic nature of neolithization in her overview of the transition to agriculture in South-East Europe.[12]

The following section will offer a comparison of the western Transdanubian segment of this mosaic with the picture reconstructed for other regions of South-East Europe. It seemed instructive to chose regions whose neolithization had a bearing on the transformation in Transdanubia. This comparison has a two-fold purpose: first, the identification of similarities and differences with regard to the transition in western Transdanubia and second, the determination of the role of this region in the overall European process.

The Greek mainland

One might think that the picture of the South-East European neolithization would be incomparably fuller in areas such as Greece than in Transdanubia, a region where research has barely begun and where there are only scanty traces of a Mesolithic.

One of the fundamental questions, namely whether neolithization can be explained by demic diffusion or indigenous transformation, remains unanswered in spite of the many large-scale investigations conducted in Greece since the early 20th century. As a matter of fact, the advocates of both theories have found justification for their views in the new body of evidence.

The debate began in 1956, with the discovery of preceramic Neolithic layers in Thessaly. V. Milojčić considered the earliest level at Argissa Magoula to be the legacy of a sedentary group who did not use pottery. A few years later, D. Theokharis claimed to have found a similar layer at Sesklo. Some three hundred pottery sherds recovered from the alleged preceramic level had to be declared "intrusive finds" in order to justify this theory. V. Milojčić went on to announce that he had identified similar preceramic levels at Akhilleion, Souphli Magula and Gediki,[13] and he also assigned a number of other sites, such as Nessonis in Thessaly, Megali Vrsi in Phtiotis and the Sidari Cave on the northern tip of Corfu, to his aceramic phase.[14]

[11] *Kertész–Sümegi* (1999); *eadem* (2001); *Sümegi–Kertész* (2001); *Sümegi–Kertész–Hertelendi* (2002).

[12] *Tringham* (2000) 53.

[13] *Milojčić* (1956); *idem* (1959); *Milojčić et al.* (1962). During her later excavations at Akhilleion, M. Gimbutas did not find any traces of an aceramic Neolithic. Challenging Milojčić's observations, she rejected the whole notion of an aceramic Neolithic. *Gimbutas* (1989b) 25–27.

[14] *Milojčić* (1960). His views were accepted by J. Lichardus and J. Pavúk, who on the basis of the Greek preceramic Neolithic, assumed a similar horizon throughout Europe. *Lichardus–Pavúk* (1973). As regards the Sidari site, it must be borne in mind that its later development reflected ties with the western Mediterranean Cardium wares, rather than with the Greek mainland. *Démoule* (1993) 4.

The existence of a preceramic horizon on the Greek mainland would undoubtedly be a strong argument for the adaptation of the indigenous population and a Mesolithic–Neolithic continuity. In order to resolve this question, a knowledge of the Mesolithic in this region is indispensable. This issue was raised by D. Theokharis who quoted microlithic assemblages as proof for the presence of indigenous hunter-gatherer groups.[15]

First to attract the undivided attention of prehistoric research was the sequence uncovered in the Franchthi Cave in southern Greece, where J. Kozłowski identified genuine Mesolithic trapezes.[16] C. Perlès argued for a preceramic Neolithic on the basis of the stone implements and the organic plant remains.[17] However, no continuity could be demonstrated between horizon X (lithic) and the earliest occurrence of pottery.[18] After the examination of the lithic finds, J. Kozłowski noted that the lithic inventory from Franchthi differed significantly from the stone tools recovered from the other 'aceramic' levels in Greece.[19] Moreover, the pottery from Franchthi was very distinct from the contemporaneous ceramic wares elsewhere in Greece. T. D. Price explained this difference by suggesting that although the indigenous Mesolithic groups adopted the main Neolithic innovations, this model of development differed from the Neolithic transition at Argissa, Dendra, Gediki and Souphli Magula.[20] It would seem that the divergence from the model proposed for Franchthi can be traced to insular influences – Melian obsidian accounts for about 12 per cent of the lithics recovered from the pre-Neolithic aceramic layer, indicating lively and continuous marine contacts.[21]

The publication of the finds from the Mesolithic levels of the Theopetra Cave in western Thessaly added a new impetus to the theory of adapting indigenous Mesolithic groups. Even though no transitional Mesolithic–Neolithic sequence or finds were observed at Theopetra, N. Kyparissi-Apostolika reasoned that the very presence of indigenous Mesolithic groups was testimony that the adaptation of hunter-gatherer communities was an independent, local process throughout the Greek mainland. She claimed that the sites of these groups have not been identified owing to the shortcomings of research.[22] K. Kotsakis voiced a similar conviction, noting that it was futile to search for traces of local hunter-gatherers in the lowermost levels of the large tell settlements since these groups occupied small, temporary settlements, some of which are now probably submerged owing to the rise in the sea level, while others can perhaps be identified in the future.[23]

Advocates of local adaptation continue to seek evidence for a Mesolithic presence in this ongoing debate. As mentioned above, D. Theokharis considered the microliths collected during field surveys in Thessaly to provide sufficient proof for the Mesolithic.[24] R. Dennell's model is similarly based on the assumption of a Mesolithic presence – his main argument is that it cannot have been mere chance that the first traces of early farmers in Thessaly can be documented in the very areas previously inhabited by hunter-gatherer groups.[25] Other protagonists of the indigenist model pointed out the fundamental differences between the material cultures of the ancient Near East and the Greek Early Neolithic.[26] They accept the existence of a preceramic phase, assuming

[15] *Theokharis* (1967).
[16] *Kozłowski* (1996) 142–143,
[17] *Perlès* (1987); *idem* (1989); *idem* (1990); *idem* (1999); *Démoule–Perlès* (1993).
[18] *Vitelli* (1993).
[19] *Kozłowski* (1996) 142.
[20] *Price* (2000) 8.
[21] *Perlès* (1989) 127; *Kozłowski* (1996) 142–143; *Halstead* (1996); *Cherry* (1990); *Jarman* (1996).
[22] *Kyparissi-Apostolika* (1998a); *idem* (1998b); *idem* (2000). According to the excavator, the breaks in occupation can be attributed to the temporary, seasonal nature of settlement, rather than a population change. *ibidem* (2000) 138.
[23] *Kotsakis* (1996). For a similar view, cp. *Runnels* (2001) 258
[24] *Theokharis* (1967) 39–43; *idem* (1969).
[25] *Dennell* (1983); *idem* (1992) 91.
[26] *Budja* (1993); *idem* (1994); *idem* (1999); *idem* (2001); *Chapman* (1994a); *Whittle* (1996); *Tringham* (2000).

a long, gradual transformation in which indigenous groups were strongly represented. T. D. Price and L. Thissen too accept the existence of a preceramic phase that they date to around 6800 BC and in this sense their opinion is closer to the indigenist model.[27]

C. Perlès' assumption of the 'empty landscape' found by the first colonists stands in sharp contrast to the indigenist model. In her view, the Early Neolithic on the Greek mainland had more in common with the neolithization in the ancient Near East than in other European regions.[28] T. van Andel, C. Runnels and P. Halstead argued that the colonization of the alluvial soils, the appearance of the full Neolithic package, complete with permanent settlements and the full range of domesticates, are unambiguous signs of an immigrant population.[29] In contrast to R. Dennell's arguments, they claim that there was no coincidence whatsoever between the new settlements and the location of Mesolithic sites.[30]

The analysis of the animal and plant remains did not provide conclusive evidence for either model. The samples from Theopetra Cave indicated that domesticated einkorn, six-row barley and lentils were present before the pottery Neolithic; the wild progenitor of einkorn, *Triticum boeticum* was identified in the Grevena region.[31] The pollen profiles for Thessaly indicated a continuity between the Early Neolithic and the preceding period; P. Tzedakis noted that the Early Neolithic farmers did not significantly transform the South-East European landscape.[32] Forest clearance was practiced on a small scale and soil erosion was minimal.[33] According to S. Bottema, there was no major climatic change between the two periods.[34]

The analysis of the plant remains and animal bones from larger areas, however, yielded an entirely different picture: J. Renfrew and S. Bökönyi both claimed that the earliest domesticated plants and the first domestic animals, sheep and goat, were not local, but had their origins in Anatolia and were brought to Greece in an already domesticated form by the first colonists.[35]

These contradictory, mutually exclusive arguments can perhaps be reconciled to some extent by assuming that examples for each model can be quoted, even if from different regions of the Greek mainland. In other words, a different model of Neolithic transformation can be envisioned for different areas, conforming to the mosaic nature of the transition. The impressive corpus of Early Neolithic finds nonetheless suggests that the immigrants' culture was overpowering compared to the adapting hunter-gatherer traditions surviving in a few isolated adaptation zones.

The Marmara and the western Pontic region

Another model of Neolithic transformation can be constructed for the region east of northern Greece, encompassing Turkish Thrace, the Marmara and the western Pontic region. M. Özdoğan uncovered a sequence from the Late Palaeolithic to the Early Neolithic at Öküzini in the Antalya area.[36] He assumed that the settlements at Çalca, Kabakli, Ağaçlı and a handful of other sites represent the legacy of a smaller group that migrated northwards from central Anatolia before the advent of the Neolithic.[37] Two types of neolithization can be distinguished in this region: one marked by Pendik and Fikirtepe,[38] reflecting the slow adaptation of indigenous groups and the

[27] *Thissen* (2000a); *idem* (2000b); *idem* (2000c); *Price* (2000).
[28] *Perlès* (1990); *idem* (1993); *idem* (1999); *Démoule–Perlès* (1993).
[29] *Van Andel–Runnels* (1995); *Halstead* (1996); *Runnels* (2001).
[30] *Van Andel–Runnels* (1995) 481
[31] *Mangafa* (1998); *Kyparissi-Apostolika* (2000) 137.
[32] *Tzedakis* (1993).
[33] *Willis* (1995) 15.
[34] *Bottema* (1974).
[35] *J. Renfrew* (1973); *Bökönyi* (1973).
[36] *Özdoğan* (1995) 34.
[37] *Özdoğan* (1997) 13–19.
[38] *Özdoğan* (1983); *idem* (1997): 19–23; *Özdoğan–Gatsov* (1998).

survival of hunter-fisher-gatherer activities. (The possible link between layer X of the Ilıpınar settlement, lying near the southern shore, and the Fikirtepe group is interpreted variously.[39]) The other type is represented by the Hoca Çeşme group, indicating the influence of a new population from the south, bringing with them Neolithic innovations.[40]

No matter how the earliest settlements in the Marmara region are dated or where its occupants are derived from, there is a general consensus, based mainly on the study of the lithic finds, that the transition to the Neolithic in the Pontic and eastern Bulgaria suggests an entirely different route, contact network, culture and perhaps population than in the Balkans. Local Epipalaeolithic tools continued to be used in the eastern regions and the entire lithic inventory reflects a strong Epigravettien influence.[41] In contrast to the Macedonian Struma region, the sites among the Pontic dunes (Ağaçlı, Gümüsdere, Domali) indicate strong ties with the north and northeast, and the stone industry has much in common with the local Epipalaeolithic in the Crimea.[42] Unfortunately, the archaeological record from that area is very patchy since the water level of the Pontic rose more or less continuously until the Early Copper Age, and the assumed Palaeolithic and Mesolithic sites are now almost all submerged.[43] The situation is practically the same in eastern Bulgaria: the single Mesolithic site known to date is Pobiti Kamuni near Varna.[44] It is striking that the coast was apparently first colonized by the Ussoe and Boian–Hamangia culture during the period corresponding to the Middle Neolithic of the Carpathian Basin, preceding the emergence of tell cultures.[45] V. Nikolov's map indicates that there are no Early Neolithic sites predating the Karanovo III period within a distance of 40 or even 50 km away from the coast and that most coastal settlements begin in the Early Copper Age.[46]

This alternative transition to the Neolithic can be traced up to the Bug–Dniester culture since it shares many similarities with the process in the Marmara and the Pontic region. Many Mesolithic groups east and northeast of the Carpathians remained hunter-gatherers, practically unaffected by the Neolithic innovations,[47] and it has also been suggested that some of the immigrant farmers arriving to this area actually adopted a number of subsistence strategies from these indigenous hunters; the significance of the Neolithic innovations may have gradually faded or even disappeared for some time.[48] The rich corpus of Starčevo–Criş finds from a few sites on the periphery indicate possible ties with the Neolithic of the Carpathian Basin.[49] The chaff-tempered fragments of import vessels found on the aceramic settlements in the Bug, Prut and Dniester region reflect contact with the Criş culture, the eastern branch of the Körös culture. The Bug–Dniester culture preserved Mesolithic traditions in its tool-kit and architecture.[50]

An interesting confirmation of this model, based on a gradual transition with the strong participation of indigenous groups, is provided by certain aspects of the later Neolithic and Copper Age of the region. A. Häusler devoted many decades to the study of the Neolithic, Copper Age and Early Bronze Age cemeteries of Central and South-East Europe and especially to the orientation of the burials and the mortuary practices. He repeatedly emphasized that burial customs are by

[39] *Roodenberg* (1993); *idem* (1995): 50; *idem* (2000) 186; *Démoule* (1993): 2; *Thissen* (2000a); *idem* (2000b); *idem* (1999) 32–33; *Budja* (1999) 132–134; *Özdoğan* (1997) 21.

[40] *Özdoğan* (1997) 23–27.

[41] *Gatsov–Özdoğan* (1994); *Kozłowski* (1996).

[42] *Gatsov* (1996).

[43] *Burov* (1995) 323.

[44] *Gatsov* (1989); *idem* (1995) 74.

[45] *Todorova* (1989) 13–14; *Todorova–Vajsov* (1993) 142–146.

[46] *Nikolov* (2002) 85, Fig. 1.

[47] *Waterbolk* (1971) 346; *Milisauskas–Kruk* (1989) 419; *Dergačev–Sherratt–Larina* (1991); *Bogucki* (1982) 105–106.

[48] *Dolukhanov* (1973) 335; *Markević* (1974).

[49] *Nestor et al.* (1950); *eadem* (1951); *Ursulescu* (2001).

[50] *Telegin* (1987); *Zvelebil–Dolukhanov* (1991); *Zvelebil–Lillie* (2000) 73.

their nature conservative and only apt to change if a particular community or population was affected by some strong cultural impact or the arrival of an alien population. Changes of this type involved the transformation of religious beliefs, including changes in the beliefs concerning afterlife. From his study of the burials, Häusler concluded that no radical transformation of this type could be demonstrated until the Late Copper Age of the Lower Danube region (corresponding to the Early Copper Age in the Carpathian Basin), in essence claiming that the mortuary practices remained virtually unchanged for four thousand years, from the pre-Neolithic to the close of the Copper Age.[51] C. Lichter reached a similar conclusion in his recent monograph,[52] as did H. Todorova from her study of the extensive site at Durankulak in the Dobrudja: in her opinion, the site was occupied by a barely neolithicized, essentially Mesolithic population, many hundreds of years after the spread of the Neolithic innovations in Central Europe.[53]

Two alternative explanations can be invoked: according to the first, the reason for the delay was that the Neolithic package arrived from the west, along a route leading through Macedonia, the Struma Valley and western Bulgaria. The other explanation is the outgrowth of a sensational – and highly controversial – hypothesis, the theory of a Pontic 'Deluge'. Since this theory may have a bearing not only on the mosaic nature of the transition to the Neolithic, but also on the neolithization of the Carpathian Basin, I shall briefly review the current (2002) state of the debate.

The theory of the Pontic deluge was first advanced by W. Ryan and W. Pitman in an article written for the journal *Marine Geology*.[54] R. Ballard, renowned for his discovery of several ancient shipwrecks, began an underwater research project in 1999 in the area and reached a similar conclusion.[55] The main points of this theory are the following:

At the time of the last glaciation, the level of the ocean was lower than the current one owing to the glaciers covering the continent. Until about 12,000 BC, the Sea of Marmara and the Pontic were landlocked freshwater lakes, separate from the Mediterranean. When the Scandinavian and Baltic glaciers melted, the level of the two freshwater lakes rose and flowed westward into the Mediterranean. Until the water input from the north was continuous in southern Russia, the Mediterranean, whose level also rose, could not expand eastward. Then, at the turn of the 7th–6th Millennium BC, or perhaps slightly earlier, around 7500 BC, the flow direction changed. The natural dam of the Dardanelles was breached first, soon followed by the dam of the Bosporus. Ryan and Pitman assumed that this process was rather dramatic owing to the huge, 150 m difference between the two water levels: according to their estimates, at least 50 km^3 of water poured into the Pontic for some three hundred days, as a result of which the water level rose by some 15 cm each day and over 100 km^2 of the shore became submerged. This estimate has been corroborated by B. Flemming, an oceanographer working in Wilhelmshaven.[56] In Ryan and Pitman's view, the present shoreline evolved fairly rapidly; other scholars claim that the process was slower and lasted until about 5500 BC. Be as it may, many settlements became submerged. One of the main goals of R. Ballard's expeditions is to locate these submerged sites. Although it is unclear what he based his estimates on, he claims that there must be at least 170 submerged settlements, ranging from the Stone Age to modern times, along the Pontic littoral.

There are three unresolved issues as regards this highly controversial theory: did the water transfer actually take place and if so, was it a rapid, sudden event and, most importantly in terms of archaeological research, the date of the catastrophe.

[51] *Häusler* (1998), with the earlier literature.
[52] *Lichter* (2001).
[53] *Todorova* (1992); *idem* (2002).
[54] *Ryan–Pitman et al.* (1997).
[55] www.nationalgeographic.com/black sea/ index.html; www.upenn.edu/museum/news/hiebert.html
[56] *Der Spiegel* 50/ Dez. 2000 272–275.

It would appear that the answers to these questions become more uncertain in the same order. The first question has already been answered by the geologic and zoologic analyses. That the Pontic was a freshwater lake has been confirmed by the presence of freshwater molluscs in the cores taken from the sediment. Another interesting phenomenon is also the consequence of the freshwater lake being inundated with saltwater: the lower layers of the Pontic are anoxic, i.e. they lack oxygen; the waters are "dead" and toxic, but at the same time they conserve all organic matter. Another argument in favour of the deluge theory is that the formation of sapropels began simultaneously in the Sea of Marmara and the Pontic, again a sign of a uniform, rapid flooding.

One counter-argument to the flood theory is that similarly to the world oceans, the water level of the Pontic was also quite high between 8200–6500 BC.[57] The Canadian and Turkish geologists who examined the sediment core samples from the Sea of Marmara believe that the process lasted several thousand years. The main argument against a rapid inundation is that a delta was only formed at the Bosporus, on the side of the Sea of Marmara, about 9000 years ago.[58] A delta is usually formed when one body of water flows into another – in this case, this should be the delta of the freshwater flowing from the Pontic. However, assuming that the deluge hypothesized by Ryan and Pitman had indeed occurred, the concomitant erosion should have washed away all traces of this delta, especially in view of the 150 m difference in water level. The question of when this alleged deluge actually took place cannot be answered at present since there is no consensus as to what time interval should be reckoned with.

There is an analytical procedure that, no matter how uncertain its outcome, can perhaps contribute to resolving the issue of when the saltwater flowed into the Pontic. Mesolithic and Early Neolithic skeletal remains have been submitted to stable isotope analyses in order to determine the composition of these individuals' diet during their lifetime. The stable carbon and nitrogen isotopes in bone collagen allows inferences regarding the nature of the one-time diet, for example the determination of the percentage of protein originating from fish and even the determination of whether freshwater or marine fishes were consumed.[59] Another analytical method, strontium isotope analyses, also indicate whether the individual in question had been born locally or was an immigrant.[60] The examination of Mesolithic and Early Neolithic skeletal remains from the Pontic littoral could perhaps reveal when freshwater species were replaced by marine ones in the diet. Accepting the theory of the sudden deluge, this change could perhaps also be traced on skeletal remains from the Lower Danube region since such a huge mass of water no doubt penetrated the lower reaches of the river, causing an ecological change. Obviously there is need for a higher number of skeletons to perform this analysis, although owing to the uncertain outcome it is doubtful whether it would be worthwhile to perform these complicated and expensive analyses.[61]

As regards the archaeological traces, there is a consensus that the plainland along the northern coastline, the Crimea and the northern Pontic would have been more greatly affected by the water level rise than the western coastline with its cliffs towering above the sea. Unless, of

[57] "The Link between the Black Sea and the Mediterranean since the End of the Last Ice Age: Archaeology and Geology". Paper read by P. Jablonka at the conference "Lebensraum Troja zwischen Erdgeschichte und Kultur", held in April, 2001, in Heidelberg. *Jablonka* (2002).

[58] U. Willmann quotes ecologist Jun Abrajano from York in *Die Zeit*: www.zeit.de/2002/28/Wissen/a-sintflut.html.

[59] *Bonsall et al.* (1997); *eadem* (2000).

[60] *Price* (1989); *Price et al.* (2001).

[61] I first mentioned this idea to D. Price and D. Anthony in September, 2002. D. Price liked the idea, although he pointed out that when he examined the Mesolithic skeletal remains from the region, he had not considered this possibility since the theory of the Pontic deluge had not been advanced at the time. He nonetheless believes that he would have noticed had there been any abrupt and conspicuous change in the diet.

course, there was a series of coastal settlements directly under the steep cliffs – but if so, why haven't any early contemporaneous settlements been found more to west, near the present coastline?

No matter how poignant the image of early farmers fleeing the thundering waves, it seems quite certain that Ryan and Pitman are mistaken in claiming that the victims of the Pontic deluge played a role in the dissemination of the Neolithic to Central Europe.[62] Although the archaeological record is patchy in some areas, there is no need for invoking a deluge of any kind for explaining the transition to the Neolithic, even less so, since the archaeological traces of early contacts in the Marmara region, eastern Bulgaria, the Lower Danube, the Prut, the Dniester and the Bug region clearly indicate that this particular route of neolithization did not lead towards Central Europe.[63] It is therefore obvious that even the most dramatic cataclysm had no role in the Linear Pottery expansion.

The Struma–Vardar–Morava Valley route

There are two major routes leading to the heartland of the Balkans from Macedonia: the Strymon–Struma Valley and the Axios–Vardar Basin. The currently available evidence on the Early Neolithic settlement network in Macedonia is insufficient for reconstructing the route of neolithization. I. Aslanis believes that the reason for the patchy record should not be attributed to the lack of settlements, but rather to the constant rise of the sea level from the beginning of the Neolithic until the end of the Copper Age, as a result of which the early settlements are now submerged.[64] Aside from quoting the already investigated, but still little understood sites at Nea Nikomedeia and Servia, a recently published volume on northern Greece, edited by T. Cullen, offers little in the way of new information. Andreou and his colleagues even confront the reader with the fact that the date of the Early Neolithic sites in the Yannitsa region is rather uncertain, in part owing to the lack of radiocarbon dates and in part to the similarities between the pottery from these settlements and Middle Neolithic wares.[65]

Of the two potential river valleys, the traditional model favoured a route through the Vardar Valley;[66] however, recent excavations have brought to light evidence indicating that the Struma Valley, lying slightly more to the east, may also have acted as one of the possible routes of neolithization.

It has been suggested that the Early Neolithic in the Struma Valley and in the Nestos–Mesta Valley running parallel to it may have played a role in the neolithization of the Central Balkans. The region known as Pirinska Makedonia is a genuine mountain landscape: the Early Neolithic sites around the highest peaks all lie at a high altitude: Kovačevo lies at an altitude of 400 m, Brezani at 650 m, Drenkovo at 500 and Kamnik at over 800 m.[67] The Mesta Valley to its east is little different: Elešnica and Rakitovo, farther to the east, are both upland settlements in the Rhodope Mountains. Bulgarian prehistorians nonetheless claim that owing to the region's favourable climate, the sheep and goat herds imported from the east survived the mountain climate and that the colonization of this region was a fairly rapid affair.[68] J. Kozłowski too believed that the rapid spread of Neolithic stone tools could be attributed to a rather rapid migration and he regarded both river valleys as potential routes.[69] M. Garašanin accepted the idea of a route through the Struma Valley, although he argued for a slower, more gradual advance.[70] S. Milisauskas too argued that both river valleys

[62] *Der Spiegel* 50/Dez. 2000 268.
[63] *Zvelebil–Lillie* (2000).
[64] *Aslanis* (1992a) 286; *idem* (1992b) 200.
[65] *Andreou–Fotiadis–Kotsakis* (2001); cp. also *Wielkie–Savina* (1997).
[66] *Hauptmann* (1967) 4; *Gimbutas* (1976) 70.
[67] *Grebska-Kulova* (1998) 145–146.
[68] *Nikolov* (1989b) 194; *Todorova–Vajsov* (1993) 59.
[69] *Kozłowski* (1996) 142.
[70] *Garašanin* (1980).

played an important role in the northward spread of the Neolithic.[71] On the basis of the finds from the early layers of the Kovačevo site (Layer I), the settlement layout, the house forms and the occurrence of certain artefact types, such as marble bracelets, ear plugs and pintaderas, J.-P. Démoule also assumed contacts between the Early Neolithic in the Struma Valley and Anatolia.[72] However, this appears to have been a rather isolated, north to south movement since contact between the river valleys was practically impossible owing to the barrier of high mountains. It is exactly because of this relative isolation that M. Lichardus-Itten considers the route leading through the Struma Valley route to have been of minor importance, interpreting the roughly seventy Neolithic sites (not all of which date to the Early Neolithic) as representing a "*Siedlungskammer*".[73]

The Vardar and the Upper Struma region are nonetheless important since they offer an explanation for the presence and early dating of the earliest Neolithic sites in western Bulgaria: Gălăbnik, Pernik, Čavdar, Sofia–Slatina, Kremikovci, Kurilo, Ohoden and Gradešnica, even if sites such as Anza, Drenovac and Zelenikovo support a route through the Vardar Valley.[74] According to V. Nikolov, the contact zone between the Karanovo I and the Starčevo culture lay somewhere in the Morava region.[75] Irrespective of whether the first farmers arrived through the Vardar or the Struma Valley, they reached northwestern Bulgaria and the Lower Danube region simultaneously at the beginning of the Balkanic Neolithic – they met up at Slatina near Sofia, to quote M. Lichardus-Itten.[76] They arrived to the very region where, according to J. Chapman and R. Tringham, they established lively exchange and other cultural contacts with the hunter-fisher-gatherer groups of the Danube Gorges.[77]

The Danube Gorges and the Lower Danube region

Few regions of prehistoric Europe have inspired so many research projects, theories, international conferences, studies and books as the Danube Gorges. Even a brief overview of the Mesolithic–Neolithic transition in the Lower Danube region, of the research results and of the many different theories advanced in this field of research, fall beyond the scope of this study.[78] A debate similar to the one surrounding the Greek preceramic has evolved around the site of Lepenski Vir and the chronology of the Lepenski Vir culture. The excavator of the site, D. Srejović dated phases I and II of Lepenski Vir to the Mesolithic, claiming, like Milojčić, that the pottery in these phases was intrusive from the upper layers.[79] In order to bolster his theory, Srejović even went as far as to claim that the radiocarbon dates for the site were erroneous. His proto-Starčevo theory, the idea of a local centre of domestication and the shifting of the entire Starčevo sequence into the Middle Neolithic, was not accepted.[80] This theory was first challenged by B. Jovanović who excavated a similar settlement at Padina; based on the observations made at that site he claimed that the pottery from the early layers of Lepenski Vir were not intrusive and that phases I–II could be

[71] *Milisauskas* (2001) 149.

[72] *Démoule* (1993) 2–3; *Démoule–Lichardus-Itten* (1994).

[73] *Lichardus-Itten* (1993a); *idem* (1993b); *Lichardus-Itten et al.* (2002).

[74] *Gimbutas* (1976) 70; *Garašanin* (1979b) 81–83.

[75] *Nikolov* (1999) 65; cp. also *idem* (1998) 82.

[76] *Lichardus-Itten* (1993a) 116.

[77] *Chapman* (1989b); *idem* (1994a); *idem* (1994b); *Tringham* (2000).

[78] For excellent recent overviews (without even a hope for completeness!), cp. *Srejović* (1969); *idem* (1971); *idem* (1975); *idem* (1979); *idem* (1988); *Srejović–Letica* (1978); *Jovanović* (1969); *idem* (1972); *idem* (2001); *Boroneanț* (1989); *idem* (1990); *Voytek–Tringham* (1989); *Whittle* (1996); *Chapman* (1989b); *idem* (1993); *idem* (1994b); *Radovanović* (1996); *Halstead* (1989); *Roman–Păunescu* (1996); *Bonsall et al.* (1997); *Borić* (1999); *Tringham* (1971); *idem* (1973); *idem* (2000); *Bonsall* (2000).

[79] *Srejović* (1988) 15; *idem* (1989).

[80] On the occasion of his last lecture – one month before his death – delivered in the autumn of 1996 at an international conference held in Zrenjanin (Nagybecskerek), Srejović continued to advance his model of the proto-Starčevo culture. The papers read at this conference have not been published.

correlated with the early Körös–Starčevo period,[81] a dating corroborated also by the reliable radiocarbon dates of 6500–5700 calBC.[82] There are few prehistorians who would reject the authenticity of the pottery from these early layers.[83] After their re-examination of the original documentation, M. Garašanin and I. Radovanović concluded that the vessel found in House 54, dated to 6250–6020 calBC, was an *in situ* find and could thus hardly be regarded as intrusive.[84] The details of this debate are by and large irrelevant as far as the gradual transformation of earlier lifeways, the adaptation of the immigrant farming communities from the south and the hunter-fisher-gatherer groups with a genuine Mesolithic lifestyle are concerned. We know that the animal bones from Lepenski Vir I–II reflect a community with a Mesolithic lifestyle, a point first made by S. Bökönyi.[85] We also know that C. Bonsall and his colleagues submitted the skeletal remains from Lepenski Vir, Vlasac and Schela Cladovei to bone collagen analyses. The stable carbon and nitrogen isotope analyses revealed that this population had initially subsisted mainly on fish and other aquatic species and that a major change occurred in the diet around 5700 calBC. From this time, the greater part of the diet was based on terrestrial foodstuffs and the earlier protein dominated diet was to a large extent replaced by plant food.[86] This can hardly be interpreted otherwise than a reflection of the shift to a Neolithic, food-producing lifestyle. R. Tringham, who originally rejected an interpretation along these lines,[87] has since modified her views in the light of more recent research and the detailed analysis of the lithic finds.[88] The rejection of a Mesolithic presence and a Mesolithic–Neolithic interaction is untenable in view of the increasing evidence testifying to the presence of semi-sedentary communities who retained their Mesolithic lifestyle, to the adoption of a mixed diet, and to the gradual gracilization of the robust skeleton;[89] the cereal remains identified in coprolites, the presence of domesticated cattle, dog and pig on some settlements[90] and, last but not least, B. Voytek's analysis of the lithics indicate that these communities were descendants of the population inhabiting the area since the Epipalaeolithic who adopted the technological innovations gradually and on their own terms.[91] Still, there is some truth to D. Srejović's proto-Starčevo theory (with the exception of his ideas on the independent invention of pottery). In other words, there is no fundamental contradiction in an indigenous shift to sedentism and a neolithization under Starčevo–Körös impacts – it might be instructive to examine the chronological dimensions and interrelation of these two processes.[92]

The adaptation of the indigenous Mesolithic population in the Danube Gorges is thus indisputable. It has at the same time been noted that some changes occurred in the animal husbandry of the immigrant Starčevo communities in the Morava mouth and to its north. The domestic animals brought here from the south, the sheep and goat were much smaller than their Aegean–southern Balkanic counterparts.[93] It is also quite certain that cattle was domesticated by the late

[81] *Jovanović* (1969); *idem* (1972).

[82] He expounded his views on the Lepenski Vir culture most recently at the UISPP conference held in Liège. *Jovanović* (2001).

[83] *Whittle et al.* (2002).

[84] *Garašanin–Radovanović* (2001) 118, 122.

[85] *Bökönyi* (1975) 244–245; *Tringham* (1973) 555.

[86] *Bonsall et al.* (2000).

[87] *Tringham* (1973).

[88] *Voytek–Tringham* (1989); *Tringham* (2000).

[89] *Roksandić* (2000) 78–81; *idem* (2001).

[90] *Voytek–Tringham* (1989) 494. As regards the pre-Neolithic breeding of cattle, it is not entirely clear what is meant by the "wild ox" identified at the Icoana site.

[91] *Voytek–Tringham* (1989) 495.

[92] *Boroneanț* (1989).

[93] *Tringham* (2000) 46. A similar observation was made for the Körös culture in the Berettyó region. The sheep and goat bones found at Ecsegfalva, a settlement lying on the northern fringes of the Körös distribution and near the Central European–Balkanic agro-ecological barrier as defined by Pál Sümegi and Róbert Kertész, were conspicuously small. These bones probably came from underdeveloped animals who suffered from the climatic changes, rather than from sick ones. László Bartosiewicz's kind personal communication.

Starčevo period,[94] as shown by the cattle bones from Foeni (Fény)–Szálas, a site lying near the Hungarian border.[95] Domestic dog and pig probably complemented the range of domesticates – the latter can be seen as the result of adaptation to local conditions, rather than as part of the original Neolithic package in the Starčevo culture.[96]

It is quite obvious that the two-way adaptation played an important role in the Lower Danubian mosaic of Neolithic transformation. It is also quite certain that this adaptation can in part (perhaps to a smaller extent) be traced to the changed climatic circumstances, and in part (perhaps mainly) to the interaction between the two groups.

A glance at the map of the Starčevo distribution reveals that its eastern territories border on the Danube Gorges.[97] J. Chapman's suggestion that there were vigorous exchange relations and perhaps even intermarriages between the indigenous Mesolithic groups and the immigrants is thus supported by the geographic contiguity between the two.[98] Chapman's suggestion that this interaction was most intensive in two areas, namely the Morava mouth and the Sava mouth, is highly relevant to the present study.[99] R. Tringham has similarly assumed that there was some interaction between the Mesolithic and Neolithic groups at the Morava–Danube confluence and she emphasized that interaction tends to strongly stimulate both participants.[100] In addition to intermarriage between the two populations, Tringham hypothesized that there was increasing competition for resources, in which the Körös–Starčevo groups eventually won out.[101] I believe that Tringham was correct in noting that the widespread shift to a subsistence based on food production can be regarded as a 'victory'. But it must also be borne in mind that the ethnically mixed population decided to adopt sedentism of its own free will – we know that in the north, the same population continued its forager lifeways providing a better livelihood for many centuries.

The Mesolithic–Neolithic interaction and the mixing of the two populations in the Danube Gorges shares many similarities with the hypothesized process involving exchange relations and ethnic mixing in western Transdanubia. There are two major differences, however. In the Danube Gorges, there is excellent direct evidence for the presence of Mesolithic groups, while the same cannot be claimed for western Transdanubia (and it is uncertain whether evidence of this type will ever be found). The other major difference is that while the exchange and contact networks in western Transdanubia paved the way for expansion to the heartland of Central Europe, the main thrust of the contact networks in the areas east of the Morava mouth seems to have been towards the Lower Danube region, the Banat, Transylvania and the plainland in eastern Hungary during the ensuing cultural development. The Danube Gorges offered an ideal micro-environment, but the relative isolation of the area meant that its contacts with and impact on what might be called 'mainstream neolithization' were rather limited.[102]

The eastern Carpathian Basin

The slopes and river valleys of the southern Carpathians, the Banat and Transylvania, as well as Moldavia could be omitted from an overview of the patterns of neolithization since this study is concerned with the transition in western Transdanubia. One might be justified in claiming that

[94] *Tringham* (2000) 49.

[95] *Greenfield–Draşovean* (1994).

[96] The role of dogs in the Mesolithic society of the Danube Gorges has already been mentioned in Chapter 6. To briefly reiterate: R. Tringham argued that dogs were used for herding wild herds – in this sense, dogs played an important role in procuring certain resources and, ultimately, in a specific phase of the shift to sedentism. *Tringham* (1973).

[97] *Brukner* (1974) 46; *Garašanin* (1979b) 117.

[98] *Chapman* (1993) 111.

[99] *Chapman* (1989b) 512.

[100] *Tringham* (2000) 49.

[101] *Tringham* (2000) 50.

[102] *Whittle* (1996) 25.

what happened in the eastern Carpathian region had little impact on what went on in Transdanubia and should therefore, similarly to the highly complex and fascinating process of neolithization in the Adriatic or the Tejo valley of Portugal, be neglected.

Two slightly opposing considerations nonetheless justify the inclusion and brief mention of this region. First, I would like to demonstrate that the Neolithic infiltrating Moldavia through the Banat, the Olt Valley and Transylvania took a different path than the variant advancing westward from the Morava mouth. I found the first indications of this differing path when reviewing the architectural traditions; in the following I shall supplement the points noted in Chapter 3 with aspects other than architecture and house orientation.

The other reason is a positive observation. One could explain the transition to the Neolithic in the Drava, the Balaton, the Rába and the Danube region without a comparison with the process in the eastern Carpathians, were there not an area in Hungary where this comparison is unavoidable, seeing that two branches of the Balkanic cultural complex, the Körös and the Starčevo groups met under yet little known and little understood circumstances. This area is the southern part of the Danube–Tisza Interfluve.

From her examination of the lithics brought to light at various sites in Transylvania and the Partium (Ciumeşti/Csomaköz, Gura Baciului/Bácsi Torok, Livada, Iclod/Iklód–La Doroaie, Moreşti/Malomfalva, Leț/Léc, etc.), Z. Maxim concluded that the river valleys and the upland areas were inhabited by Tardenoisien groups when the first 'civilizational' innovations reached this region.[103] I. Paul regarded the indigenous contribution important enough to speak of a "Prăcriş" culture, based on analogies with the Balkans.[104] A. László emphasized the existence and significance of a Transylvanian "proto-Starčevo", going as far as to claim that the Gura Baciului (Bácsi Torok) site predated Ocna Sibiului (Vízakna) and the Cîrcea–Gradinile group, the earliest Neolithic sites in the southern Carpathians.[105] Z. Maxim based her conclusions on the neolithization of the region on earlier research and on the countless studies published on this subject.[106] The sites at Cuina Turcului, Gradinile, Cîrcea I, Ocna Sibiului (Vízakna) and Gura Baciului (Bácsi Torok) lying by Cluj (Kolozsvár) indicate that Neolithic groups advanced northward and northeastward through the Olt Valley and, slightly later, through the Maros and White Körös Valleys.[107] M. Nica has pointed out that the southern Balkanic wave from the Banat, identified at Verbița and Sălcuța, had a major cultural impact on western Oltenia; following the arrival of the Starčevo–Criş groups, a number of similar ornamental motifs made their appearance on early Transdanubian Linear Pottery and Alföld Linear Pottery vessels, reflecting contact with the Carpathian Basin.[108] The cultural impact during the latest Starčevo phase actually coincides with the population movement assumed by Gh. Lazarovici, J. Lichardus and M. Lichardus-Itten at the beginning of the Middle Neolithic in the Carpathian Basin.[109]

The contact between the Transylvanian Criş communities and the Early Neolithic groups in the Prut and Seret Valleys in the eastern Carpathians has been amply documented.[110] The Moldavian and more westerly, Transylvanian ramifications of the Bug–Dniester culture are also fairly well known.[111] However, the contacts with the Great Hungarian Plain, with the Körös culture and the formative Alföld Linear Pottery (Szatmár II) groups have a more direct bearing on our theme.

[103] *Maxim* (1999) 27–30, 221–222.
[104] *Paul* (1995) 62–67.
[105] *László* (1998) 176–177.
[106] *Comşa* (1959); *idem* (1966); *idem* (1971); *idem* (1972–73); *idem* (1976–77); *Berciu* (1961); *Păunescu* (1962); *Vlassa* (1966); *idem* (1968); *idem* (1972a); *idem* (1972b); *Paul* (1970); *Lazarovici* (1969); *idem*(1970); *idem* (1977a); *idem* (1979); *idem* (1981); *Nica* (1976); *idem* (1977); *idem* (1995); *idem* (2000); *Lazarovici–Maxim* (1995).
[107] *Maxim* (1999) 29.
[108] *Nica* (2000) 133–134.
[109] *Lazarovici* (1977b); *idem* (1998); *Lichardus–Lichardus-Itten* (1989–90).
[110] *Comşa* (1978); *idem* (1995); *Păunescu* (1962); *Ursulescu* (1984); *idem* (2001).
[111] *Zvelebil–Lillie* (2000), with further literature.

N. Kalicz and J. Makkay had noted many decades ago that the sites of the old "Szatmár group" at Nagyecsed, Tiszabezdéd, Tiszavalk, Tiszacsege, Ebes, Ibrány and Ciumeşti (Csomaköz) in the Berettyó and Szamos Valley, in the Érmellék area and in the Upper Tisza region can hardly be understood without assuming contact with Transylvania.[112] Körös elements were more dominant than the Linear Pottery traits in the early Alföld Linear Pottery (Szatmár II) assemblages from Nagyecsed–Péterzug and Tiszabezdéd–Servápa.[113] Based on these features, N. Kalicz and J. Makkay assigned these site to their Szatmár I group, together with Méhtelek and Homorodul de Sus (Felsőhomoród).[114] Following his excavation of the Kőtelek–Huszársarok site, P. Raczky noted that the assemblages of the Szatmár II group "contained many formal and ornamental elements whose origins could only be explained through the Transylvanian branch of the Körös culture."[115] According to Romanian prehistorians, northwestern Transylvania and the Partium was colonized during the late Starčevo–Criş period,[116] characterized by the assemblages from Ciumeşti (Csomaköz) and nearby Pişcolţ (Piskolt),[117] the implication being that any cultural impact could at the most only have affected the late Körös distribution extending to the Berettyó River in the Great Hungarian Plain and the formative Alföld Linear Pottery (Szatmár II) groups. Early Alföld Linear Pottery sites, however, are lacking between the Nyírség and the Hortobágy;[118] K. Kurucz noted that the finds from the early sites on the Szatmár plain (up to the Szamossályi site) differed from the assemblages in more westerly areas to the extent that "any genetic relations between the two seem very doubtful."[119] The later development in this region definitely confirms this observation. Very few of the late Alföld Linear Pottery groups ornamented their pottery with painting, and the ones that did applied painted bands after the vessel had been fired. Curiously enough, this is the single region occupied by the "Esztár–Szamos region Painted Pottery group": this group too used the intricate and lovely ornamental motifs of the other Alföld Linear Pottery groups, albeit these motifs were not incised, but painted onto the vessel surface, as shown by its name. Cultures with painted pottery were fairly widespread in this period, as well as in the Late Neolithic, but their distribution essentially fell east of Hungary's present borders and coincided with the one-time Criş distribution.

An overview of the different theories on the emergence of the early Alföld Linear Pottery culture falls outside the scope of the present study. I merely wished to point out that the significant difference between the houses of the Körös culture and the Alföld Linear Pottery on the one hand, and the Transdanubian (Central European) Linear Pottery on the other, discussed in Chapter 3, was not an isolated phenomenon. This observation fits in nicely with the model describing the Neolithic development in the Tisza region and Transylvania in the eastern part of the Carpathian Basin as interrelated and often intertwining processes, reflected in the transition to the Neolithic, in the contacts between the Körös branch in the Great Hungarian Plain and the eastern Körös branch and in the formation of the early Alföld Linear Pottery (still called Szatmár II, incorrectly) contemporaneously with the late Körös period (still called the Protovinča period, again incorrectly).

In spite of the many differences, a few similarities can also be noted between the neolithization in Transdanubia and the Upper Tisza region. The Körös culture (and its Transylvanian branch) came into contact with an indigenous Mesolithic population, and the early Linear Pottery (Szatmár II) sites too probably represent the settlements of a mixed population, similarly to the sites in the Balaton region. The location of the currently known early settlements (and burials) suggests yet

[112] *Kalicz–Makkay* (1972b) 78; *eadem* (1977); *Makkay* (1982).
[113] *Kalicz–Makkay* (1977) 20.
[114] *Kalicz–Makkay* (1972b) 92; *eadem* (1976) 22.
[115] *Raczky* (1983); *idem* (1986) 31; *idem* (1988) 27.
[116] *Lazarovici* (1980) *idem* (1984a); *idem* (1984b); *Maxim* (1999); *Ignat* (2001).
[117] *Lazarovici–Németi* (1983).
[118] *Kurucz* (1989) 14–15.
[119] *Kurucz* (1989) 15.

another similarity. It is striking that while the earliest Alföld Linear Pottery phase seems to be absent from the southern part of the Great Hungarian Plain,[120] the Szatmár II sites show dense clusters along the Tisza and its tributaries from the Érmellék area through the Upper Tisza region to the Bükk, the Mátra and the Cserhát Mountains. The two Szatmár II settlements uncovered at Mezőkövesd–Szentistván-Mocsolyás and Füzesabony–Gubakút can be fitted into this series.[121] These sites lie fairly close to the Mesolithic settlements identified in the Jászság area, to the late Mesolithic sites in the Zagyva Valley and the lower reaches of the Tarna River.[122] The early Linear Pottery sites too cluster in the valleys extending to the mountain region, in the Hernád and Bodrog Valleys to the east and the meanders of the upper reaches of the Tisza River. It has been repeatedly noted that riverside settlements in the area between the Great Hungarian Plain and the mountainous region to its north acted as a kind of 'marketplace' for the interaction, the possible co-existence and mixing of groups with different lifestyles during different periods of the Neolithic and the Copper Age in Hungary.[123] In this respect it resembles western Transdanubia and the Balaton region where, on the testimony of the lithic finds, interaction between different groups was stimulated by the trade of radiolarite from the Szentgál mine. The most valuable raw materials of the Northern Mountain Range were limnoquartzite from the Mátra Mountains and obsidian from Tokaj. The stone tools found on early Alföld Linear Pottery sites and, also, on Körös sites were predominantly manufactured from these two rocks.[124] It would appear that these raw material sources were controlled by Mesolithic groups both in Transdanubia and in the Northern Mountain Range, and that the main cause and incentive for the interaction was the trade in these lithics. The indigenous groups presumably received Neolithic technologies in exchange for the lithic raw material in the Great Hungarian Plain too, similarly to the situation assumed for Transdanubia. One other difference between the two regions is that in the Upper Tisza region, the indigenous Mesolithic groups controlling the raw material sources came into contact not with one, but with two immigrant populations: the Körös groups expanding up to the Szolnok–Berettyó line from the south, and the Criş groups advancing from the Ér and Berettyó Valleys to Szatmár and towards Tokaj along the Tisza (no doubt attracted by the sources of the valuable lithic raw material).

The Voivodina, the Danube–Tisza Interfluve and Slavonia

The Starčevo groups advancing westwards along the Sava and the Drava appear to have developed different contact networks. While there are a number of reliable stratigraphic sequences from Pelagonia and southern Serbia in the culture's southern distribution,[125] the observation made there can only be applied to the chronology of the northern areas with difficulty. The finds from Divostin and Grivac in central Serbia have challenged the earlier view that the monochrome phase always preceded the white painted phase since pottery fragments representing both types have been found in the lowermost layer.[126] The first comprehensive overview of the Starčevo chronology was written by V. Milojčić, soon followed by D. Arandjelović-Garašanin's study;[127]

[120] The single early site in the south is Hódmezővásárhely–Térefok. *Horváth* (1994).

[121] *Kalicz–Koós* (1997a); *eadem* (1997b); *eadem*(2000); *Domboróczki* (1997); *idem* (1999); *idem* (2001a); *idem* (2001b).

[122] *Kertész* (1994); *idem* (1996); *Kertész et al.* (1994). I would here like to thank R. Kertész and L. Domboróczki for informing me about their excavation at Tarnaörs, conducted in 2002.

[123] *Kalicz* (1994b); *Raczky et al.* (1994); *Bánffy* (1999).

[124] *Kalicz–Makkay* (1976) 23; *Starnini* (1994); *idem* (2000); *idem* (2001); *T. Biró* (2001a); *Domboróczki* (1997); *T. Biró* (2002b); *Maxim* (1999).

[125] *Gimbutas* (1976); *Garašanin* (1979a).

[126] *Bogdanović* (1996).

[127] *Milojčić* (1949); *Arandjelović–Garašanin* (1954).

since then, many papers have been devoted to the internal chronology of this culture.[128] Still, it would appear that there are few secure chronological anchors: the different types of pottery painting styles show a rich regional divergence in the developed Starčevo phases[129] and their correlation with the new radiocarbon dates also runs into difficulties.[130]

St. Dimitrijević's chronological scheme appears to be the most useful one for the periodization of the Starčevo culture in the Voivodina and Croatia.[131] One interesting feature of the sites in the territory between the Danube and the Tisza is the presence of both Körös and Starčevo elements, contrasting sharply with the more northerly areas (the territory of the interfluve from the border up to Kalocsa), where only the presence of the Körös culture has been attested. The monochrome and white painted fragments from Perlez–Batka, Vinogradi–Bečej and Bačka Topolja (Topolya) indicate an early settlement and, also, that the Starčevo expansion reached the Hungarian border during the culture's early phase.[132] Early Körös sites include the settlements at Nosa–Biserna Obala (Nosza–Gyöngypart) and the neighbouring Ludas–Budžak (Ludas–Budzsák).[133] One of the key sites for understanding the contact between the early Starčevo and the Körös cultures, as well as the similarities and differences between the two, is Donja Branjevina, lying beside an old, marshy branch of the Danube.[134] According to the excavator, the earliest monochrome pottery was followed by white painted wares; both phases were characterized by applied ornaments typical for the Körös culture. The overlying layer was dominated by black on red painting and a preponderance of Starčevo elements. Unfortunately, a detailed description of the site and its finds has still not been published; it has also been opined that it is futile to expect precise stratigraphic data owing to the excavation techniques used during the investigation of the site. This is all the more regrettable since Donja Branjevina appears to have been the northernmost site where a blending of the two Early Neolithic cultures of the Carpathian Basin, the Körös and Starčevo elements can be observed – hence its immense significance for the Early Neolithic in the Danube–Tisza Interfluve.

The southernmost site in the Danube–Tisza Interfluve yielding a purely Körös assemblage is Vaskút–Hiesel-kert.[135] I. Kutzián quoted Bogojevo (Gombos) and Opoljenik (Monostorszeg) in the Voivodina as the closest parallels to the site.[136] Moving northward, a burial and several Körös finds were uncovered during a small excavation at Szakmár–Kisülés.[137] These sites are negligible compared to the several dozen sites identified between Baja and Kalocsa, some of which were first investigated by Kálmán Szabó, an amateur archaeologist, and later by Éva V. Vadász. The systematic investigation of these sites was continued during the past two years as part of a new research project conducted by Jörg Petrasch, Rozália Kustár and the present author. In some areas, a total of thirteen (!) Körös sites were identified on the outskirts of a single village (Homokmégy).

While we identified countless Körös sites, we did not find a single fragment during the field surveys or during the re-examination of the earlier assemblages that could be clearly assigned to the Starčevo culture. The area surveyed lay between the one-time branches of the Danube, no more than a few kilometres away from Lánycsók, the renowned Starčevo site of Transdanubia,

[128] E.g. *Garašanin* (1958); *idem* (1979a); *Srejović* (1969); *idem* (1971); *Ehrich* (1977).

[129] *Schubert* (1999) 200.

[130] *Whittle et al.* (2002).

[131] *Dimitrijević* (1974). This is why, similarly to most of my Hungarian and Croatian colleagues, I have used this chronological scheme for evaluating the Starčevo elements at Pityerdomb.

[132] *Srejović* (1988); *Babović* (1988); *idem* (1992); *Trajković* (1988).

[133] *Garašanin* (1960) 229; *idem* (1979a) 116–117.

[134] *Karmanski* (1968); *Trbuhović–Karmanski* (1993).

[135] *Kutzián* (1944) Fig. 9. 13–19, Fig. 10.

[136] *Kutzián* (1944) Figs 12–13; *idem* (1977) 14.

[137] *Kutzián* (1977). These finds will be evaluated and published by the present author.

and Babarc. This phenomenon is all the more enigmatic considering that before the large-scale river regulations (i.e. also in the Neolithic), the Danube was not a wide river since it branched into several smaller channels in this gently sloping area. Sandbanks, marshland and sedge-marshes lay between the branches and the crossing of the river could hardly have caused any difficulties. The fact that the river had been crossed and that the communities on the two sides of the river maintained lively contacts with each other is indicated by imports of lithic raw material from the Mecsek Mountains and northern Transdanubia at sites such as Fajsz–Garadomb and by finds from the Great Hungarian Plain on the southern shore of Lake Balaton.

The peculiarities in the regional distribution of the Starčevo and Körös culture can only be partly explained at present. The Körös distribution can be understood in view of the location of the southern sites at Donja Branjevina, Nosza, Ludas, Gombos and Monostorszeg. The soil conditions in the southern part of the Danube–Tisza Interfluve may also have influenced the Körös expansion as far as the Danube. The sand ridges from Szeged through Kecel to Kalocsa and from Mélykút to Dusnok are dissected by countless dried-out Pleistocene rivers and streams.[138] The wholly dry sand hills in the Kiskunság area were unsuitable for settlement, while the former river and stream channels provided suitable soils. It seems likely that the Körös groups advanced along these southeast–northwest oriented 'green corridors'. The other question, why the Starčevo groups did not settle on the left Danube bank, remains an enigma for the time being. It is possible that the striking differences between the settlement density of the two cultures is part of the answer.[139] Neither can we exclude the possibility that the different development of these two cultures, reflected by the eastern and southeastern contacts of the Körös groups and the contact networks with Central Europe through the Danube Valley maintained by the Starčevo groups, also played a role in this separation.

Although not strictly allied to the problem of neolithization, the issue of the "Protovinča" theory[140] is indirectly linked to the transformation in Transdanubia owing to its implications for the Körös culture and the formation of the Alföld Linear Pottery, as well as in view of certain vessel types found at Pityerdomb (biconical vessels, polished patterns, black-topped wares). The main point of the "Protovinča" theory is that certain preconditions to the emergence of the Vinča culture could be observed in the southern part of the Great Hungarian Plain and that this process can be traced in certain pottery types. There are three main problems with this theory. The first has best been formulated by P. Raczky and N. Kalicz,[141] an argument that has been accepted by international research, according to which it seems unlikely that a major civilization like the Vinča culture with an extensive distribution and a long duration could be derived from an area falling beyond its distribution territory. The other problem is one of chronology. János Makkay has repeatedly emphasized that the lightly incised and polished geometric patterns on "Protovinča" type vessels – biconical vessels, their variants with a low neck, black polished and black burnished ware – can be documented not only in the late Körös phase, but also on sites of the earlier Körös period, such as the closed assemblage recovered from a pit at the Szarvas 23 site.[142] The other side of this problem is that the finds from the Szarvas 23 site were supposed to provide the key evidence for the early appearance of the Körös culture in the Great Hungarian Plain owing to the

[138] I would here like to thank Pál Sümegi for sharing this information with me.

[139] *Kalicz* (2000). It has been suggested that the apparent density of the Körös settlement network is largely an illusion owing to the frequent shifts in the location of the small, briefly occupied settlements. Cp. *Sherratt* (1983). However, the astonishing quantities of pottery recovered from individual pits belie this assumption.

[140] *Makkay* (1982); *idem* (1987); *idem* (1990a); *idem* (1996).

[141] *Raczky* (1983); *idem*(1988); *Kalicz* (1983); *idem* (1988).

[142] *Makkay* (1996) 46 and note 71; *idem* (2000).

white painted pottery fragments in the assemblage. However, this possibility is now rejected exactly because of the "Protovinča" finds.[143] A real catch 22: while Makkay considers the "Protovinča" types to date to the early Körös period because of the white painted pottery sherds, other prehistorians challenge the early date of the assemblage on the strength of the late forms. The third problem, too, has several aspects. It is fairly obvious from W. Schier's detailed typological study and correspondence analysis of Vinča wares that the so-called "Protovinča" types made their appearance not in the earliest, but in the A3 phase on the eponymous site and in the core area of the culture.[144] Unfortunately, Romanian and Serbian prehistorians still disagree over the earliest Vinča phase[145] and there is still a lack of reliable radiocarbon dates for the end of the Starčevo sequence and the formative, earliest Vinča phase.[146] As regards the issue of transformation versus the significance of cultural impulses from the south, I would agree with J. Chapman who views the early Vinča culture as a system of local responses to different impulses and who, accordingly, envisions not one major centre, but various regional variants.[147] This model allows the occurrence of certain vessel types specific to the Vinča culture farther to north in the Great Hungarian Plain and it offers an explanation for the early Vinča impacts on the late Starčevo–early Linear Pottery transitional sites in Transdanubia. The finds from Pityerdomb, exhibiting a number of "Protovinča" traits as defined by J. Makkay, serves as a case in point.

A closer look at the Starčevo distribution in the Srem and Slavonia reveals that the stratified, central Balkanic tell-like settlements of the culture disappeared, to be replaced by small, single-layer, horizontal sites. These include the oft-quoted Golokut–Vizić site and the more recently excavated settlement at Kudoš–Šašinci.[148] This settlement form diverges markedly from the one typical for the South-East European Early Neolithic and the southern and central Starčevo distribution, but corresponds to the usual settlement type in the Great Hungarian Plain, in the Danube–Tisza Interfluve and in the Körös region, as well as to the Starčevo settlements in Transdanubia. And, we may add, to the Central European Linear Pottery settlement form. It is quite possible that this divergent settlement form and settlement pattern was to some extent influenced by the climate, a point mentioned in Chapter 3, discussing the origins of the longhouse. It is equally possible that the semi-sedentary lifestyle too played some role in the preference of smaller, single-layer settlements in the northwest. This would again imply that the northern Starčevo groups interacted and mixed with indigenous late Mesolithic groups.[149]

The differences in the settlement form in the northern Starčevo distribution can thus perhaps be explained with the presence of a different indigenous group. R. Tringham and J. Chapman believe that there were lively exchange relations and, also, some competitiveness between the indigenous Mesolithic population and the immigrant Starčevo groups beyond the Morava–Danube confluence.[150] M. Richards has recently published the palaeodietary findings from the examination of skeletons from Maroslele–Pana and Bačka Topolja (Topolya).[151] The proportion of stable isotopes reflected the percentage of fish and molluscs, cereals, cattle meat and milk consumed during these individuals' lifetime. The analyses revealed that the diet was essentially Mesolithic in nature on these two sites: the proportion of terrestrial food did not exceed that of aquatic ones. A counter-example can also be quoted: a similar analysis performed on the skeletal remains from

[143] *Thissen* (2000a); *idem* (2000b); *Whittle et al.* (2002).
[144] *Schier* (1995); *idem* (1996); *idem* (1997); *idem* (2000).
[145] For good overviews, cp. *Garašanin* (1979b); *Lekovi*ć (1990); *Lazarovici* (1977b); *idem* (1979); *idem* (1987–88).
[146] *Gläser* (1996).
[147] *Chapman* (1981) 14.
[148] *Petrović* (1976); *idem* (1986–87); *Lekovi*ć (1988b).
[149] *Kaiser–Voytek* (1982) 330–331.
[150] *Tringham* (2000); *Chapman* (1993); *idem* (1994b). Cp. also the section on the Danube Gorges.
[151] *Richards* (2002) 75–78.

a late Starčevo burial at Golokut–Vizić indicated a diet based mainly on cereals. The Tardigravettien tradition of the lithics found on the Mesolithic sites in the Novi Sad area provides yet another piece of evidence for the presence of an indigenous Mesolithic population.[152] This would suggest that the situation in the northern Starčevo distribution, in the Danube, Sava and Drava region, resembled the one in western Transdanubia. The presence of Mesolithic groups and the possible Mesolithic–Neolithic interaction is similarly based on indirect evidence and on the changes in the Starčevo culture, as in more northerly regions. The direct evidence for the late Mesolithic is rather patchy, to say the least.

The transition to the Neolithic in the Danube Valley and the Central European heartland

Southwestern Slovakia and eastern Austria

The arrival of immigrants to the South-East European regions discussed in the above is indubitable and the presence of an indigenous Mesolithic population could also be demonstrated, to a smaller or greater extent by the prehistorians working in these regions. It is clear from the present study that Transdanubia was a frontier region because it marked the northernmost point of direct Balkanic immigration. It must here be emphasized that western Transdanubia is an important frontier region not because Hungarian scholars regard this region as the cradle of the Linear Pottery, but rather because the ratio of the immigrant groups to the indigenous population with a Mesolithic subsistence and their role in the creation of a new lifestyle based on sedentism and food production shifted to the latter's advantage in this region. This frontier zone should certainly not be perceived as a kind of prehistoric colonialism, with the underdeveloped local population subdued and dominated by the new immigrants enjoying a technical superiority and greater productivity.[153] It has already been noted that cereal cultivation called for a greater labour investment than hunting and gathering. The shift to food production did not entail a rise in living standards and thus the adoption of the new lifestyle could hardly have been motivated by a yearn for better living standards.[154] According to the social network system model, the smaller the population density in a given area, the more distant the groups establishing contact with each other.[155] An interaction zone emerges in the case of large distances and low population densities; this zone should not be visualized as a constant, rigid boundary, but as a larger area with a constantly shifting extent, in which the actual scene of interaction is also in flux. Similarly to other regions of temperate Europe, the transition in the Carpathian Basin was most likely a long period of interaction on the northwestern fringes of the Starčevo culture between the immigrant groups from the south and the indigenous hunter-gatherer population who controlled the lithic resources, set in the area encompassing the Balaton region and western Transdanubia. It is my conviction that the ecological conditions of this region, the traits of the find assemblages from Pityerdomb, Gellénháza, Vörs and the Balaton area and the radiocarbon data all point in this direction.

Moving towards the heartland of Central Europe from this region, it would seem that one must explicitly search for evidence of the presence and impact of immigrants; in these regions, the indigenous populations and local cultural impacts have been fairly accurately identified as a result of more recent research.

[152] *Brukner* (1966); *Kozłowski* (1973).
[153] *Vencl* (1982); *idem* (1983); *idem* (1986) 46–47.
[154] *Zvelebil* (1986) 10; *Rozoy* (1996).
[155] *Madden* (1983) 193.

In the light of the above, J. Pavúk's views, essentially unchanged for long decades,[156] can be definitely rejected. Accepting J. Lichardus' earlier "proto-Linienbandkeramik" theory,[157] Pavúk made two claims.[158] The first of these was that Linear Pottery society and lifestyle developed in southeastern Slovakia. The other, the more bizarre aspect of his thesis, concerned the date of the emergence of the Linear Pottery. Pavúk dissociated the Linear Pottery development from the cultural and ethnic impacts from the Balkans, both in the Great Hungarian Plain and in Transdanubia, the latter being the more interesting of the two areas owing to its proximity to Slovakia. In his opinion, the transition and the first use of pottery was not only entirely independent of the Körös–Starčevo culture and its possible impacts on the Nitra Basin, but actually began much earlier than the generally accepted late Starčevo period, in the period corresponding to the early/classical Starčevo phase. Pavúk attributed the undeniable similarities between the late Starčevo and the Linear Pottery to the later, southern expansion of groups from the Nitra Basin, during the course of which the Linear Pottery groups interacted with the Starčevo communities of the Spiraloid B phase in Transdanubia. He distinguished four sub-phases in the early Linear Pottery phase of western Slovakia – the Nitra, the Hurbanovo, the Bíňa and the Milanovce phases – in order to demonstrate the complexity and long duration of the process.[159] This categorization is uncertain and controversial, to say the least, since it is based exclusively on the manufacturing technique and the (rather rare) ornamental motifs of the pottery. Only at Bíňa (Bény), were fine, biconical wares found; the pottery from the other sites is dominated by thick-walled household pottery. It is very difficult, if not downright impossible to set up a finer typological classification and to distinguish chronological horizons on the basis of coarse pottery.[160] Most of the pottery in question was admittedly recovered from smaller soundings and a handful of pits uncovered during small-scale excavations; very few represent closed assemblages and the "Hurbanovo phase" is exclusively based on a few surface finds.

In a recent study, J. Petrasch examined the problem of the Linear Pottery 'homeland' from a demographic aspect.[161] According to his estimates, northern Transdanubia, southwestern Slovakia, the Burgenland and Lower Austria could at the most have had a population of five thousand at the dawn of the Neolithic. Petrasch concluded that this region was more likely the first stop in the Linear Pottery expansion, rather than its point of departure. He also noted that the Linear Pottery probably evolved in the Zala and Bakony region and the southern part of the area around Lake Fertő, i.e. western Transdanubia.[162]

I believe that even though Pavúk was mistaken about the dating, he nevertheless had a point as far as the pottery was concerned: the assemblages made up of small, worn, poor quality vessel fragments can indeed be regarded as the legacy of the indigenous population. This population, however, was unlikely to have invented pottery making on its own; a more likely scenario is that they adopted this innovation, together with other elements of the Neolithic package, from the groups on the fringes of the Starčevo distribution or rather from the groups born from the mixing

[156] Most recently in September, 2002, at the Linear Pottery section of the Thessalonica conference.

[157] *Lichardus* (1972).

[158] *Pavúk* (1962); *idem* (1972); *idem* (1980a); *idem* (1980b); *idem* (1994).

[159] *Pavúk* (1980a) 40–47.

[160] In contrast to the few dozen sherds categorized by Pavúk, Ottó Trogmayer examined tens of thousands of pottery fragments and was unable to establish the internal chronology of the Körös culture (*Trogmayer* [1968]). The lack of an internal chronology for the Körös culture is one of the great debts of Hungarian prehistoric research. M. Cladders' analyses of Linear Pottery wares yielded a similar result: in her opinion, the differences can be traced to regional, rather than chronological differences. *Cladders* (1995).

[161] *Petrasch* (2001).

[162] *Petrasch* (2001) 17. The other implications of his estimates will be discussed below.

of the southern immigrants and the indigenous groups. The Nitra type pottery can best be linked to the early Linear Pottery in the Balaton region: the lack of fine wares and of any ornamentation can also be observed in assemblages of the Sármellék–Révfülöp type. It would seem that as a result of the cultural impacts affecting Transdanubia, the indigenous groups inhabiting the northern part of the Little Hungarian Plain too tried their hand at pottery making.[163]

The discovery of early Linear Pottery sites in the immediate vicinity of the Danube will undoubtedly contribute to a better understanding of the transition. Unfortunately, sites of this type have not yet been found, in spite of the extensive excavations along the planned track of the M1 and M15 motorways. Only at Bicske and, more recently, on the northern outskirts of Budapest have early Linear Pottery settlements been identified. N. Kalicz assigned the latter to the period corresponding to Pavúk's Hurbanovo and Bíňa phase, although he added that a periodization of this type could not be applied to the early Linear Pottery phase in Transdanubia.[164] J. Pavúk himself was unable to present sites of this type either along the Danube, or in the Csallóköz area on his most recent, 1994 map. The reason for this hiatus remains a mystery for the time being. The contacts of the Linear Pottery sites in the Burgenland and Lower Austria with Transdanubia suggest that the main route of migration led through the Danube Valley. It is to be hoped that future investigations will resolve this issue.

The evidence for the Mesolithic in eastern Austria is even more scanty than in Transdanubia.[165] We owe much of what we know about the early Linear Pottery sites to E. Lenneis' untiring investigations. By 1989, the number of known sites rose to forty; some of these settlements conformed to the *"Siedlungskammer"* settlement pattern.[166] J. Lüning called attention to the typical features of these settlements, linked by an intricate contact network.[167] I have already noted that a similar settlement pattern can be hypothesized in the Kerka Valley. In the past two decades E. Lenneis and J. Lüning have identified one or two new early Linear Pottery sites in eastern Austria each year. The examination of the finds from the Brunn II site near Vienna indicated that this settlement can be regarded as the closest parallel to the Pityerdomb site, in view of the remarkable similarities between the two assemblages.[168]

In her publication of the finds from Prellenkirchen, E. Ruttkay noted that the early Linear Pottery assemblages from Austria can hardly be regarded as representing the earliest Linear Pottery. She suggested that these assemblages be grouped under the label *"Vornotenkopf"*.[169] E. Lenneis too has repeatedly emphasized that together with the more recently identified Lower Austrian sites, the Prellenkirchen, Neckenmarkt and Strögen type assemblages should be assigned not to the *"älteste"*, but to the *"ältere Bandkeramik"* phase, a period that would correspond to J. Pavúk's early Linear Pottery horizon and to R. Tichý's phase I in Moravia.[170] The key site in this respect is Brunn II, an extensive settlement surviving into the later Linear Pottery period, where the *"älteste"* phase could be documented. Obviously, no far-reaching conclusions can be drawn before the full publication of the finds; what is already obvious, though, is that the pottery finds are dominated by the bright red, porous wares typical for Pityerdomb and the transitional

[163] Unfortunately, I did not have the opportunity to personally study the Nitra (Nyitra) finds.

[164] *Kalicz-Schreiber–Kalicz* (1992) 58.

[165] *Antl–Weiser* (1995); *Antl* (1999).

[166] *Lenneis* (1989); *idem* (1995).

[167] *Lüning* (1998).

[168] *Stadler* (1999). I would here like to express my gratitude to P. Stadler, who kindly provided several opportunities for studying the pottery, the idols and the lithics from Brunn. I must also thank E. Lenneis who, in the autumn of 1999, took the time to share her thoughts on this unpublished find assemblage with me during several long conversations.

[169] *Ruttkay–Wessely–Wolf* (1976).

[170] *Lenneis* (1995); *idem* (2002 [2001]); *Harrer–Lenneis* (2001); *Pavúk* (1980a); *Tichý* (1960).

sites in the Balaton region. At the same time, the linear motifs and the strong Starčevo traits observed at Pityerdomb are entirely lacking. The stone tools were made mostly from Szentgál radiolarite.[171] There can be no doubt about the lively contacts between Lower Austria and Transdanubia during the transition to the Neolithic. The Szentgál imports found in late Mesolithic contexts in southern Moravia too indicate that this contact network emerged at an earlier date.

Southern Germany to the Wetterau region

The proliferation of studies on the southern origins and indigenous roots of the sedentary, food-producing early Linear Pottery civilization advancing along the Danube and its tributaries, the discussions on the predominance of the immigrant or the indigenous component, matches the abundance of publications on the Danube Gorges. D. Gronenborn has devoted several lengthy articles and a doctoral thesis to the neolithization in the southern part of Central Europe.[172]

In contrast to Slovakia, where the chipped stone artefacts have not been sourced, most of the lithic finds from southern Moravia and Lower Austria have been submitted to provenance analyses. Tools made from Szentgál radiolarite dating to the late Mesolithic have been found on three sites: Smolín, Pribice and perhaps Dolní Vestonice.[173] In contrast, I. Mateiciucová found that the stone tools brought to light at Kamegg and Wien–Bisamberg were manufactured from locally available raw material.[174] This distribution may be accidental or may simply reflect the shortcomings of research, but it may also indicate that in the Vienna Basin, the main route of communication led along the northern part of the Danube Valley. It is also possible that this distribution can be associated with a later, rather striking phenomenon: following the initial Neolithic expansion, the number of site rose visibly towards northern Moravia and Bohemia,[175] as well as in the Munich Basin and to its northwest up to the Taunus Mountains, i.e. up to northwestern Germany. The regions south of the Danube, the easily accessible valleys of Upper Austria and the Salzkammergut were at the same time avoided by the Neolithic settlers.

From their earlier research of the Mesolithic in southwest Germany, W. Taute and M. Jochim concluded that the number of late sites declined around the mid-6th Millennium BC. They attributed this decline to the onset of a wetter climate, a change observed also in Transdanubia, when the rise of Lake Balaton's water level forced the hunter-gatherer groups to relocate their settlements to higher ground. In southern Germany, however, this climatic change led to heavy forestation and the virtual disappearance of the undergrowth, meaning that hunting became near-impossible in the dense, unnavigable woodland.[176] The intensive fieldwalks and GIS surveys conducted by M. Jochim and his colleagues in southwestern Germany over the past five years resulted in the identification of 244 new sites from the Palaeolithic to the Neolithic, including several Mesolithic ones.[177] In a recent overview of the Mesolithic, M. Jochim rightly noted that the perception of the Mesolithic–Neolithic transition in southern Germany has changed significantly since the 1980s in the light of the impressive corpus of new evidence. In his view there are now more uncertainties in the evaluation of the individual phases of neolithization; what we do know is that this process was far more complex and lasted longer than earlier believed.[178]

[171] *Mateiciucová* (2001); *idem* (2002a).
[172] *Gronenborn* (1994); *idem* (1997); *idem* (1998); *Gronenborn* (1999), with further literature.
[173] *Mateiciucová* (2002a) 174.
[174] *Mateiciucová* (2002a) 174.
[175] *Quitta* (1960); *idem* (1962); *Pavlů–Vokolek* (1992); *eadem* (1996); *Kaufmann* (1983); *Küssner* (1994).
[176] *Jochim* (1990)183–185; *Taute* (1980); *Jochim* (1998). T. D. Price voiced a similar opinion. *Price* (1999) 191.
[177] *Jochim et al.* (1998) 127.
[178] *Jochim* (2002) 196.

In view of the intensive Mesolithic settlement along the rivers in South-East Europe, and especially in the light of the sites in the Danube Gorges, some prehistorians assume a similarly intensive settlement in the heartland of Central Europe and argue that the transition to the Neolithic was more the result of indigenous development than of the cultural impact of new immigrants.[179] True enough, several riverine settlements have been identified in southwest Germany, such as the ones found along the Neckar for example.[180] Still, it is clear from A. Zimmermann's overview that the late Mesolithic population of Central Europe was considerably lower compared to the forager population in the Danube Gorges.[181]

There are a few elements in the archaeological record that belie the possibility of a purely "authentic development". The occurrence of Danubian shells in southern German Mesolithic contexts has already been mentioned.[182] The presence of stone implements made from Szentgál radiolarite in southern Moravia is another indication of pre-Neolithic contact networks.[183] Parallel to the spread of the Neolithic, raw material from Szentgál too reached the northwestern fringes of the early Linear Pottery distribution, appearing also on a site lying over one thousand kilometres from the Transdanubian mine.[184] Szentgál radiolarite has been found together with early Linear Pottery finds at the following sites: Neckenmarkt, Brunn II, Strögen, Bylany I, Mintraching, Langenbach and Schwanfeld. At the latter site, radiolarite accounted for about 1 per cent of the lithics.[185] Although the percentage ratios will no doubt be refined and D. Gronenborn's data are not accepted by all scholars,[186] the point is not the number of tools made from the raw material procured from the Carpathian Basin, but that there was contact between the two regions, and in this case even one single tool made from Szentgál radiolarite is sufficient proof.[187] The occurrence of sheep and goat bones is similarly an indication of South-East European impacts. Cattle and dog could obviously have been domesticated locally, but the wild progenitors of caprinae are not indigenous to the forests of Central Europe.[188] In addition to hunted big game and domesticated cattle, the animal bone sample from Bavans in the western Alps, dated to the late 7th Millennium BC, also included a handful of sheep and goat bones.[189] The occupants of the Bavans rock shelter undoubtedly acquired these animals from the food-producing immigrants arriving from distant regions.

The settlement plan of the early Linear Pottery groups in France too harks back to Mesolithic traditions.[190] One of the early settlements in the Aisne Valley was made up of two separate settlement nuclei; on the testimony of the finds and the kitchen refuse, the hunters and the herdsmen apparently had separate living quarters.[191] Recent monographs on the early Linear Pottery in Württemberg (southwest Germany) and the Rhine–Main region indicate that the settlement layout and settlement patterns, as well as the finds from these regions shared many features with those in the Parisian Basin.[192] J. Kneipp has identified the earliest Neolithic settlements of west central Germany in the lowest river valleys and loess terraces, lying below 300 m.[193]

The preponderance of the Mesolithic contribution to neolithization in the southern regions of Central Europe is thus indubitable. Our picture of the nature and the details of the local, indigenous

[179] *Tillmann* (1993); *idem* (1993b).
[180] *Kind* (1997); *idem* (2001).
[181] *Zimmermann* (1995) 8. According to his estimates, the average population density was about 0.1/km².
[182] *Rähle* (1978) 165; *Jochim* (1990) 188–189; *idem* (1990) 212. Cp. also Chapter 6.
[183] *Mateiciucová* (2002a).
[184] *Gronenborn* (1994); *idem* (1997); and *idem* (1999) 166, with minor modifications.
[185] *Gronenborn* (1994) 138.
[186] *Gaffrey* (1994) 407–413; *Zimmermann* (1995) 12; *Tillmann* (1993b).
[187] Cp. also the debate mentioned in Chapter 9.
[188] Ibex, the single native wild goat species of the Alps, was never domesticated. *Lindig–Schwitalla* (1999) 27.
[189] *Chaix* (1997).
[190] *Blanchet et al.* (1993) Part 2.
[191] *Hachem* (2000) 310–312.
[192] *Strien* (2000); *Kneipp* (1998).
[193] *Kneipp* (1998) 44 (map).

development, the extent of late Mesolithic horticulture, and the degree to which the late Mesolithic groups were willing to adopt neolithic innovations will no doubt be modified in the light of new research, as will the details of the size and proportion of the immigration from the south. A mosaic patterning similar to the one observed in South-East Europe and the Carpathian Basin – and especially in Transdanubia – probably characterized the transition in these regions too: the indigenous reaction to the cultural impulses from the south can hardly be described as a uniform process. The many different models proposed for describing the transition can be seen as a reflection of the regional diversity and of the many different regions studied by the prehistorians active in this field of research. What clearly emerges from the many studies is that late Mesolithic societies were affected by direct influences from the Carpathian Basin, from Transdanubia, and that this impact left a lasting mark on the cultural development of Central Europe.

Another cultural impact also played a role in the neolithization of the Danube riverhead region and of southern and western Germany. The population making La Hoguette pottery migrated from eastern France to southwest Germany at roughly the same time as the groups with Limbourg pottery appeared in the Alsace, Belgium, the Lower Rhine region and the Maas area (5600–5400 BC).[194] One of the key issues concerning these two groups, namely of whether La Hoguette represents neolithization by the Cardium pottery from the Mediterranean northward along the Rhône, does not heave a bearing on the present study. The other issue, whether this pottery represents the legacy of the surviving Mesolithic population, is more important. The first studies on the Limbourg group argued for an interpretation along this line,[195] a position accepted also by D. Gronenborn who considered the western tradition in the early Linear Pottery lithic assemblages to be strongly Mesolithic in nature.[196] The Bavans site, mentioned above, was a settlement of the La Hoguette group; the caprinae found at the site perhaps indicate that the group occupying this base camp was still fairly mobile and that their regional contacts also meant some sort of interaction with the early immigrants from the Danube region. The semi-sedentary lifestyle would also explain the overlap with the westernmost early Linear Pottery groups.[197] It has also been suggested that they tried their hand at pottery making as a result of interaction with early Linear Pottery groups,[198] although this seems to be contradicted by the entirely differing manufacturing technique, one of the main arguments advanced for a neolithization originating from the Cardium culture province, mediated northward by the indigenous Mesolithic population.[199] Pottery fragments tempered with ground bone have been found in early Linear Pottery and Flomborn assemblages.[200] The early finds from Bad Nauheim–Niedermörlen in the Wetterau region north of Frankfurt too included pottery of this type.[201]

This site has provided exciting evidence for contact with the Carpathian Basin. A number of Mesolithic sites were also identified during the field surveys conducted since the 1970s in the area known as the Mörlener Brucht.[202] A total of thirty-nine (!) Linear Pottery sites have been found in this fertile loess region, located mostly along the edge of the loess plateau.[203] A certain settlement hierarchy could also be observed: some sites, such as the one at Hempler, apparently

[194] *Jeunesse* (1987); *Lüning et al.* (1989).
[195] *Van Berg* (1990).
[196] *Gronenborn* (1998) 191–192.
[197] *Strien* (2000) 78; *Gronenborn* (1998) 192 (map).
[198] *Strien* (2000) 77.
[199] *Lüning et al.* (1989).
[200] For example at Bruchenbrücken. *Strien* (2000) 75.
[201] During the examination of the finds from Bad Nauheim–Niedermörlen–Hempler, Sabine Schade-Lindig and Helmut Spatz called my attention to the Limbourg vessel fragments in the assemblage. They were correct in noting that their manufacturing technique differed from that of Linear Pottery vessels. La Hoguette pottery has also been reported from Niedermörlen: *Schwitalla* (1999) 28.
[202] *Lindig-Schwitalla* (1999) 26.
[203] *Schade* (1999b).

functioned as central places.[204] A total of some 1300 features, eight burials and countless open-air ovens dug into the loess were uncovered at this extensive site. The pottery assemblage was also quite rich, at least compared to the ceramic assemblages from other Linear Pottery sites in Germany.[205] One part of the Hempler settlement dates to the early, another to the Flomborn period that can be correlated with the Hungarian Keszthely phase. According to the excavator, the early settlement covers one specific section of the site.

The Hempler site is important for two reasons. The first of these is that in addition to a number of surface finds, the fragments of about seventy clay figurines and other figural representations were brought to light. Even though these do not all date from the early Linear Pottery period, they do include a number of early fragments, such as the feet resembling the ones from the anthropomorphic vessels found at Mostonga I and Pityerdomb[206] and the red painted bull head, closely paralleling the ox figurine from Pityerdomb.[207] Other remarkable similarities can be noted between the representations from Niedermörlen and Transdanubia in the later Linear Pottery, the Keszthely and the Notenkopf phase.[208] The pronounced Vinča traits on a hollow animal figurine is also striking.[209] Similar southern elements, labelled Milanovce influences, can be noted in the finds from Schwanfeld.[210]

The direct contacts are indicated by the fragments of household vessels ornamented with finger impressed ribs, finger drawn barbotine and Schlickwurf, as well as by vessels decorated with finger impressions and pinched patterns.[211] The pottery finds included fragments bearing rudimentary linear motifs whose best analogies can be quoted from Vörs–Máriaasszonysziget.[212] The survival of Starčevo–Körös traditions among the Linear Pottery communities is also reflected in the use of flat bone spatulae (bone idols),[213] such as the one brought to light at Niedermörlen.[214]

It would appear that these were not imports,[215] but locally made articles. The remarkable similarities between the different find types would suggest that individuals from Transdanubia – perhaps from Pityerdomb, Vörs and Gellénháza – or perhaps from Brunn II and from other contemporary Transdanubian, southwester Slovakian and Lower Austrian settlements had reached the densely populated regions north of the Main. The finds indicate that this contact was maintained not only during the formative Linear Pottery period, but for successive generations. Even though the full evaluation of the Niedermörlen settlement and its finds has not been published yet, it is fairly obvious that this is one of the key sites for understanding the regional contacts of early Linear Pottery communities.

[204] *Schade* (1999a) 10–11. A similar settlement pattern was noted on the Aldenhovener Platte to the north. *Schwitalla* (1996) 70–75.
[205] *Schwitalla* (1999) 28.
[206] *Schade-Lindig* (2002b) Fig. 6.
[207] *Schade-Lindig* (2002b) Fig. 9/34.
[208] *Schade-Lindig* (2002b) Figs 17–18.
[209] *Schade-Lindig* (2002b) Fig. 10/32.
[210] *Gronenborn* (1999) 155–156.
[211] *Schwitalla* (1999) 29; *Schade-Lindig* (2002a) Fig. 10/f–k.
[212] I would here like to thank Sabine Schade-Lindig for kindly allowing me to visit the excavation and study the finds. I am also indebted to Annemarie Häußer and Helmut Spatz (who have since both died under tragic circumstances) and for sharing their ideas with me.
[213] *Makkay* (1990b).
[214] *Schwitalla* (1999) 28; *Schade-Lindig* (2002b) Fig. 7.
[215] This was my impression after I had studied the finds.

Western Transdanubia and the Central European heartland: expansion and regional contact networks

We can now raise the most important issue, the role of Transdanubia in the Central European transition to the Neolithic. The different models seem to fit A. Whittle's criteria, according to whom three basic modes of transition can be distinguished: in contrast to the north, where the predominantly Mesolithic population adopted the Neolithic package slowly and circumspectly, the earlier Mesolithic culture in the southerly regions was supplanted by the immigrants' civilization. The most interesting situation developed in the areas between the two, where different forms of mixing can be noted.[216] This variety and diversity corresponds to the general mosaic nature of the transition; the smaller the area investigated, the higher the number of variations and the greater their divergence from each other. In the light of the above, the transition in the Carpathian Basin and specifically in Transdanubia can be regarded as the quintessential, almost symbolic setting of the mixed transition as defined by A. Whittle and others.

The significance of migration and its traces in the diffusion of food-producing economies

The diametrical opposition between the migrationist and the diffusionist theory has been one of the main points of discussion in prehistory since the late 1960s and early 1970s. L. Binford and K. Flannery agreed that the 'victory' of the Neolithic lifestyle can only be conceptualized by assuming some sort of fundamental change: external pressure, such as climatic change, or an internal one, such as the one caused by an increased population. Both scholars attributed the change to the disruption of the former equilibrium, leading to the creation of a new balance in the Neolithic.[217] The arguments advanced by H. T. Waterbolk and S. Vencl ran along broadly similar lines: they assumed an empty or barely inhabited landscape in Central Europe owing to the spread of dense woodland unsuitable for human subsistence. They accordingly linked the emergence of the Neolithic to the arrival of immigrant groups.[218] P. Bogucki's views on the transition in Poland and M. Jochim's earlier opinion – now modified in the light of recent field surveys – too echoed this view.[219] While rejecting these explanations and invoking other factors, I. Hodder too accepted the dominance of the immigrants when claiming that the adoption of domestication and other food-producing innovations were motivated by the demand for power and the control over other groups and resources.[220] Drawing also from the results of various analytical procedures, T. D. Price reached a similar conclusion concerning the neolithization of North Central and Northern Europe. In his opinion, the transition in Central Europe can best be described as a swift colonization whose possible phases cannot be demostrated on the basis of radiocarbon dates.[221] In contrast, the Neolithic groups of Northern Europe first settled in areas avoided by indigenous hunter-gatherer groups. The latter eventually adopted the sedentary, food-producing lifestyle providing a stable livelihood.[222]

That the Linear Pottery expansion could be associated with actual population movements was widely accepted following H. Quitta's first comprehensive overview, many points of which have remained valid.[223] Based on many decades of research in Germany and Austria, J. Lüning too supports the migrationist position, together with other prehistorians who participated in his early Linear Pottery research project and later excavated and evaluated the finds from various Linear

[216] *Whittle* (1996) 35–36.
[217] *Binford* (1968); *idem* (1971); *Flannery* (1971); *Flannery* (1973); *Meyers* (1971).
[218] *Vencl* (1986) 45–48; *Waterbolk* (1982).
[219] *Bogucki* (1988); *Jochim* (1990).
[220] *Hodder* (1990) 31.
[221] *Price* (1999) 187.
[222] *Price* (1999) 187, 193.
[223] *Quitta* (1960); *idem* (1962).

Pottery sites in Central Europe.[224] S. Milisauskas and J. Kruk have firmly stated that there is not one single example for the co-existence and joint occupation of a settlement by the two groups.[225] Both J. Lüning and R. Bradley have noted that the settlement plans, the house forms and the finds show such a remarkable uniformity in the northward expanding Linear Pottery communities as to indicate that no matter how far individual groups advanced, they felt themselves part of the same large community.[226] The signs of violent death noted on a few sites suggested to the advocates of the migrationist theory that this expansion was not always a peaceful process, even if a long, peaceful coexistence could be assumed in many areas.[227]

An independent confirmation of the migrationist theory came from outside archaeology, from the realm of genetics. In order to prove that the 'Neolithic revolution' could be traced to the actual migration of food-producing communities, rather than to the spread of food production, A. Ammermann enlisted the help of geneticist L. Cavalli-Sforza in order to estimate the speed of the demic diffusion from the assumed centre.[228] They projected onto each other the gene maps prepared for various European regions and determined the development of genetic variations or mutations typical for a particular region by projecting current differences back into the past. They first examined the distribution of the RH negative gene and the frequencies of individual blood groups. Cavalli-Sforza found a striking correspondence between the European gene map of genetic components and the spread of neolithization. In their view, this analytical procedure is suitable for separating migrations that occurred independently of each other. The percentage ratios of the gene pools of population groups expanding west and north of South-East Europe too changed from region to region. M. Mirazón Lahr and her colleagues distinguished five European regions on the basis of indigenous Mesolithic and immigrant Neolithic genes. They found that the greatest mixing could be demonstrated in the southern and southeastern part of Central Europe, i.e. exactly in the region of the Carpathian Basin.[229]

Additional support for the migrationist theory was found in the studies examining male lineage, based on the Y chromosome marker. The results indicated a strong exodus from the Near East to Europe.[230] The analyses revealed that while the proportion of the immigrants was 25 per cent in the Balkans, this ratio dropped to below 10 per cent in Western Europe.[231] The claim that there has been no major change in the European gene pool since the beginning of the Neolithic supported C. Renfrew's theory that the diffusion of the Indo-European languages in Europe should be linked to the single incontestable, major migration: the spread of the Neolithic. C. Renfrew argued that the 20 per cent change in the gene pool reflected the immigration of Indo-European speaking Balkanic population groups.[232] Other scholars insisted that the evidence for the 80 per cent proportion of the unchanged population should be rather taken to indicate that the Indo-European language was present in Europe since the Palaeolithic.[233]

Beside traditional markers, a new genetic component passed down from the cytoplasm, providing information on the female lineage, has also been analyzed.[234] Mitochondrial DNA

[224] *Lüning* (1988b); *idem* (1997); *idem* (2000).

[225] *Milisauskas–Kruk* (1989) 408.

[226] *Lüning* (1998); *Bradley* (2001) 53.

[227] For example at Talheim near Heilbronn in southwest Germany. *Wahl–König* 1987.

[228] *Ammermann–Cavalli-Sforza* (1973); *eadem* (1984); *Cavalli-Sforza* (2000) Chapter 4.

[229] *Mirazón Lahr–Foley–Pinhasi* (2000); *Pinhasi–Foley–Mirazón Lahr* (2000).

[230] *Semino et al.* (1996).

[231] *Zvelebil* (2000) 13.

[232] *Renfrew* (1987); *idem* (2000a); *idem* (2000b).

[233] *Alinei* (2001) 89. This assumption can also be proven archaeologically as shown by two recent studies. Cp. *Häusler* (1998); *Lichter* (2001). I suspect that the advocates of the Early Bronze Age Indo-European migration theory would also have a few scathing comments about this theory!

[234] *Sykes* (2001) Chapter 4; *Jones* (2001) 50–57. M. Jones speaks warmly of the African "mitochondrial Eve" of 200 thousand years ago.

(mtDNA) studies have yielded a number of controversial results. B. Sykes, G. Barbujani, A. Torroni and others found not only evidence for a large-scale migration from the southeast to the northwest, but also for a migration in the opposite direction, an expansion from Southwest Europe and the Pyrenees (probably after the last glaciation). In this case, the other half of the percentage ratios mentioned above assumes a particularly significant role: the relatively small, 15–20 per cent proportion of the migration indicated by mtDNA analyses suggested that the greater part of the European population had remained virtually unchanged since the Pleistocene.[235] The remaining 80–85 per cent were Mesolithic genes from refugiums that can be traced throughout Europe, although the wide-scale pre-Neolithic distribution is admittedly hard to explain owing to the assumed low population density.[236]

It would appear, then, that the majority of women remained where they were and did not participate in the migrations. Projecting this finding onto South-East Europe would imply either that these migrations can be linked to small groups, to a small number of individuals or that mainly men participated in the migrations, who then chose wives from indigenous groups. This was the conclusion reached by M. Roksandić, based on palaeodemographic analyses using traditional anthropological methods, according to which the Balkanic immigrants, the bearers of the Starčevo–Körös culture at Lepenski Vir, were predominantly men.[237] Barbujani and his colleagues have repeatedly cautioned against making a distinction of this kind. Although individual exceptions to the rule – perhaps as was the case at Lepenski Vir – can hardly be ruled out, an explanation of this type is also meaningless from an archaeological perspective. A complex culture province, such as the Karanovo I–Starčevo–Körös, characterized by a widespread uniformity not only in its pottery, but probably also in other activities, such as weaving and other household crafts and traditions, would be unimaginable without the joint migration of men and women.

In sum, the findings of these genetic analyses must be treated with caution, especially as regards their correlation with findings from other fields of research.[238] In addition to possible sampling and statistical errors, it must also be borne in mind that the gene pool of a given population is not necessarily correlated to changes in group identity, material culture and language. Still, it is worth the trouble to set aside our scepticism and keep an eye on the new advances in genetic research since this field of research is a fairly new one and it is quite possible that it will contribute meaningful insights to the archaeological model of neolithization. Neither should we forget that in addition to the research on human genetics, the examination of plant and animal gene pools has also begun, another promising field of research that can similarly provide new insights to the process of domestication and the determination of possible local wild progenitors, as well as information on the plant and animal species introduced from elsewhere.[239]

The migrationist theory, including the Linear Pottery expansion to the heartland of Central Europe, has recently been buttressed by a new analytical procedure. Of the bone chemical analyses mentioned above, T. D. Price and his colleagues turned to strontium isotope analyses in order to determine whether or not population movements can be assumed.[240] By examining the skeletal remains from two Linear Pottery cemeteries in southwestern Germany, they tried to determine whether the deceased had been born locally or elsewhere. Strontium isotopes in human tooth enamel and bones provides a geochemical signature of the place of birth and the place of death respectively since it is ingested via foodstuffs. The different types of strontium isotopes ingested

[235] *Richards et al.* (1996); *Torroni et al.* (1998); *Barbujani–Chikhi* (2000); *Barbujani–Bertorelle* (2001); *Sykes* (2000); *idem* (2001); *Zvelebil* (2000).
[236] *Barbujani–Bertorelle* (2001) 25.
[237] *Roksandić* (2001) 187.
[238] *Sims-Williams* (1988).
[239] *Bradley* (2000); *Allaby* (2000).
[240] *Price et al.* (2001).

during youth and in later life can indicate whether the individual changed his place of residence during his or her lifetime. Obviously, this procedure is only suitable for determining first generation immigrants. The analysis of the human skeletal remains from Flomborn and Schwetzingen, two cemeteries in the Rhine region, the latter lying on the outskirts of Heidelberg, was expected to provide evidence that the number of actual immigrants would be low, especially since the cemeteries did not date to the earliest Linear Pottery phase. The analytical results, indicating an immigration ratio of about 20 per cent, caused quite a surprise. It must be added that later floods and the presence of groundwater may have influenced the results, yet, only in a negative direction, by replacing the 'distant' strontium isotope with a local one. Thus, in view of the taphonomical influences, the bottom line is that at least every fifth individual, both men and women, buried in these cemeteries was a first generation immigrant.[241]

The significance of these analytical findings is slightly diminished since there is no way of knowing from how far these immigrants arrived. It is possible, for example, that they arrived from other Linear Pottery settlements in the Wetterau region or from some western Mesolithic campsite. The underlying principles of this analytical procedure preclude the possibility that the immigrants had arrived from a few villages away since this could not be demonstrated using the strontium isotope analysis. The 20 per cent mobility fits in nicely with the ratio indicated by the genetic analysis of Neolithic expansion. It is quite possible that these calculations reflect a general tendency and that we may indeed assume that in the Central European heartland there was one Danubian immigrant to four indigenous hunter-gatherers. It was this ratio that determined the nature of the early Linear Pottery culture in this region. If this was indeed the case, it can be regarded as the terminal point of the Neolithic transformation, with a predominance of indigenous groups and a considerably smaller role played by immigrants. As mentioned above, the ratio of immigrants to indigenous groups probably reached a balance of 50–50 per cent or turned in western Transdanubia. In view of the immense distance between the regions colonized by the Linear Pottery groups, we can probably assume that the ratio of the immigrants declined continuously until reaching the 20 per cent in the Rhine region. It is perhaps unnecessary to emphasize that the smaller the region investigated, the larger the local variations will be to this assumed broad pattern. A similar difference in the immigrant to indigenous ratio can be inferred from the differences between the find assemblages from Pityerdomb, Vörs and the Balaton region. Another good example for major local differences is provided by the roughly forty Linear Pottery settlements in the Mörlener Brucht, whose finds suggest a conspicuously high percentage of direct Transdanubian immigrants.

In the light of the new archaeological and analytical evidence for migrations, it is hardly surprising that the indigenist model is typically advanced for areas that were bypassed by mainstream neolithization, such as Western and Northern Europe and the Alpine region. According to the indigenist position, Neolithic transformation can be attributed to diffusion and contact, with the minimal participation (or none at all) of Balkanic immigrants.[242] M. Budja went as far as to suggest that the boundary of neolithization lay not between the hunter-gatherer and farming populations, but that it should rather be envisioned as a geographic boundary between the eastern Adriatic and Balkanic groups.[243] The indigenist model considers the continuity between the Mesolithic and Neolithic assemblages to be the decisive factor in the transition,[244] and that neolithization was not a particularly rapid and intensive process even in South-East Europe.[245]

[241] *Price et al.* (2001) 601.
[242] *Jackes et al.* (1997).
[243] *Budja* (2001) 41.
[244] *Tilley* (1994).
[245] *Willis–Bennett* (1994).

I would favour an integrationist position, not because of a predilection for compromise, but rather because this seems to be the most suitable for describing and interpreting the regional diversity making up the colourful mosaic of the transition to the Neolithic.[246] Although the role of migrations is indisputable in the Neolithic transformation, an approach in which Neolithic immigrants are typically regarded as active, organized communities and the indigenous hunter-gatherers are seen as passive, unproductive groups would certainly be erroneous. While it is broadly true that there was a mixing between individual groups, a regional or even local diversity in the passive and active roles can most certainly be assumed as regards the actual proportions of this mixing.[247] This is valid for Transdanubia too, in the light of the Starčevo assemblage from Pityerdomb and the finds from the sites in the Balaton area.

In a recent study M. Zvelebil listed no less then seventeen different criteria for modelling Neolithic transformation.[248] The transformation in the Balaton area and the Kerka Valley seems to fit the following criteria:

(A) Folk migration. Directional movement of a population to a previously defined region. The arrival of the Starčevo groups to Transdanubia can be seen as such a migration.

(D) Infiltration. Gradual penetration by small, usually specialist group of the region, who fill a specific economic or social niche. The differing settlement types and settlement patterns in the three Transdanubian micro-regions and the Balaton area[249] suggest that colonization was a gradual process and that the formerly uninhabited valleys and ridges were occupied first ("*Siedlungs-kammer*").

(F) Frontier mobility. Small-scale movement of population within contact zones between foragers and farmers, occurring along the established social networks, such as trading partnerships, kinship lines, marriage alliances. The Central European–Balkan Agro-Ecologic Barrier, as defined by P. Sümegi and R. Kertész, ran along the centre of the Carpathian Basin. A long interaction, exchange relations and co-existence can be noted between the groups to the north and south of this barrier, reflected by the changes in the find assemblages from the northern fringes of the Starčevo distribution, the occurrence of Szentgál radiolarite in the Late Mesolithic and the Starčevo period in southern Transdanubia, the visible mixing between the Starčevo and the local finds in the Balaton area, the contact between the occupants of the Vörs, Gellénháza and Pityerdomb settlements, as well as the indications of survival, i.e. the twelve Linear Pottery sites in the Kerka Valley and the appearance of Linear Pottery settlements in southern Transdanubia. The differences between the Kerka Valley, the Hahót Valley, the Balaton area, the Kapos Valley and eastern Transdanubia can be explained by the mosaic nature of the transformation. The three investigated micro-regions in western Transdanubia reflect three different types of transition. It is quite feasible that the number of models for the transition to the Neolithic will rise with each new river valley examined more closely.

(G) Contact. Through trade, exchange, within the framework of regional or extra-regional trading networks which served as channels of communication through which innovation spread. Very little would be left of Chapter 9 and the present chapter if the paragraphs discussing contacts were to be omitted. The early Linear Pottery migration along the Danube would be inconceivable without assuming extensive, long-term – and, as has been shown, pre-Neolithic – contact networks.

[246] *Renfrew* (2000b); *Gronenborn* (1994); *idem* (1998); *idem* (1999); *Zvelebil* (1986); *idem* (1989); *idem* (2000); *Whittle* (1996); *Bánffy* (2000a); *idem* (2000b); *idem* (2000c).

[247] *Zvelebil* (2001) 5–6.

[248] *Zvelebil* (2000) 58.

[249] Cp. Chapter 1.

This migration can be envisioned as a series of small waves, rather than an all-compassing tide (especially in the light of the quoted find assemblages). To use a fashionable postmodern expression: a palimpsest was created from the mixing between the indigenous groups and the new waves of immigrants, clearly reflected in the archaeological record from Lower Austria to the Wetterau region and Eilsleben. The slightly differing proportions of the indigenous populations, the degree of mixing and the successive waves of new immigrant groups created a colourful cultural mosaic.[250] Two salient feature of this mosaic can be described as follows:

One is the remarkable uniformity of the early Linear Pottery settlement plan, architecture and material culture. It would seem that in spite of minor hostilities, the mixing of the indigenous groups and the immigrants engendered a uniform group identity and a lively network communication.

The other feature is obvious from a glance at M. Zvelebil's map: the largest frontier zone in this transition lay in Transdanubia. I believe that ample evidence for the importance and the role of this frontier has been presented in this study. Western Transdanubia was a frontier zone also in the sense that the proportion of immigrants to indigenous groups reached a balance and turned in this region, with the latter becoming dominant from this point. The archaeological evidence for the Mesolithic–Neolithic transition and the early Linear Pottery culture in Central Europe, as well as the results of bone chemical and other analyses indicate that the early Linear Pottery groups migrating to Central Europe were ethnically mixed and that they originated not from the Balkans, but from the Carpathian Basin. Specifically from the frontier zone in Transdanubia.[251] This, then, was the role of western Transdanubia in the Neolithic transformation of Central Europe.

The causes behind the expansion and the survival of the contact networks

The expansion to the heartland of Central Europe was so rapid that it left no typological differences in the archaeological record[252] and neither can the successive phases be pinpointed with radiocarbon dates.[253] One obvious explanation was to invoke a rapid population growth for this swift expansion, based on the examples from the ancient Near East. In his quoted study on the demographic data for the Early Neolithic, J. Petrasch shattered any illusions about this theory. The archaeological evidence and the radiocarbon data indicate that the expansion from Transdanubia to Eilsleben and Schwanfeld lasted no longer than fifty to one hundred years, or two to four generations. An explanation for this rapid expansion invoking population growth would call for a 5.4 per cent growth during four generations, a figure exceeding the highest growth rate ever documented.[254] The early Linear Pottery population growth could have been no more than 0.1 per cent, a figure based on comparison with modern developing countries and a consideration of infant and child mortality rates, the poor health conditions and fatal accidents. This low population growth correlates with the number of Linear Pottery settlements in Germany. J. Petrasch concluded that demographic growth can be ruled out as the cause behind the rapid Linear Pottery expansion.[255]

In his discussion of the possible causes triggering migration, D. Anthony offered several explanations. For me, his most important observation was that negative 'push' and positive 'pull' factors can be distinguished among the causes leading to migration.[256] In other words, one possible cause triggering migration can be traced to the area of origin: overpopulation, deterioration of the climate, draught, famine and social tension. Several examples can be quoted for the other type

[250] *Otte* (2000) 44.
[251] *Zvelebil* (2001) 17.
[252] *Quitta* (1960).
[253] *Gläser* (1991); *Lenneis–Stadler–Windl* (1996).
[254] A growth rate of 4.3 per cent was recorded in North America at the close of the 19th century. *Petrasch* (2001)18.
[255] *Petrasch* (2001) 21.
[256] *Anthony* (1992) 898.

from history: one common feature of these is a previous contact with the target area. A low population density, fertile soil, proximity to water, good climate, and possible raw material sources are factors making a particular new area attractive. If exchange relations can also be created and maintained, an area of this type usually attracts settlers.

'Push' forces, such as overpopulation or climatic deterioration, can be rejected in the case of the Linear Pottery expansion. In contrast, there is evidence for each of the 'pull' forces.[257] The main emphasis is on the incentives that triggered one of the major migrations in prehistory. Obviously, these were several, different causes. "Migration is a social strategy"[258] – the evidence for major communications and contact networks between Transdanubia and the regions to its northwest has been extensively quoted in this study. This strategy had already been pursued by Mesolithic hunter-gatherer groups and it appears to have functioned quite well, judging from its survival into the Neolithic. The causes may have ranged from the need for a common area where groups living at fairly great distances from each other could exchange various commodities and ideas, to the need for pooling efforts in order to perform certain tasks and to cultivate marriage alliances and other kinship ties. The presence of Szentgál radiolarite in Moravia and of Danubian shells in Germany are modest indications of these networks in the archaeological records.

In this chapter I have offered an overview of the salient features of a development that was also typical for the formative Linear Pottery communities in Transdanubia and the northern part of the Great Hungarian Plain. However, I have not mentioned yet that the preconditions to the transition were far more favourable in the Great Hungarian Plain in almost every respect. In spite of this, we find that the classical Alföld Linear Pottery and its groups hardly expanded after the Szatmár II period. There may have been several reasons for the divergent paths of development. The lively contacts with neighbouring cultures in the east, the southeast and the south have been described in the section on the Neolithic transition in the eastern half of the Carpathian Basin. It would appear that the Alföld Linear Pottery communities exploited the advantages provided by these contacts for an intensive internal development, rather than an expansion. This intensive development linked the Great Hungarian Plain to the most developed region of the prehistoric world and led to an incipient settlement hierarchy, the first indications of urbanization in this area.[259]

One basic difference between the two regions, then, was the range, the nature and the direction of the contact networks. C. Runnels and C. van Andels have noted that the Neolithic expansion can, together with the Neolithic innovations, be conceptualized as a trade commodity forming the basis of wealth, whose acquisition was probably an attractive option.[260] The earlier, western contact network of the Mesolithic population was also exploited by the early farmers, and judging from the growing intensity of the contacts, they probably improved and expanded it. A. Zimmermann has convincingly argued that the central places ("*Zentrale Orte*"), whose emergence can hardly be dissociated from the settlement concentrations ("*Siedlungskammer*"),[261] were the main settings for down-the-line exchanges.[262] The construction of circular enclosures, calling for the concerted labour of many individuals, can perhaps be associated with the brisk trade conducted at markets.[263] The communal identity, the remarkably uniform material culture and the presumably similar social structure remained virtually unchanged for many generations. This would suggest that the contact networks survived until the Keszthely phase in Transdanubia and the Flomborn phase in Germany,

[257] For the hypothesis on the exchange relations, see below.
[258] *Anthony* (1997) 22.
[259] *Makkay* (1982) Chapter 5; *Bánffy* (2002d).
[260] *Runnels–van Andel* (1988) 102.
[261] *Zimmermann* (1995) 61–62.
[262] *Renfrew* (1972) 465.
[263] *Petrasch* (1990) 498–500.

perhaps even for some time afterwards. What remains to be explored is the mutual interest forming the basis of these contact relations. What were the commodities traded between these distant groups?[264]

I am fully aware of the fact that in presenting the following possible explanation, I am treading on extremely thin ice, for there is little in the way of tangible evidence to support this idea. Prehistorians can only rely on a few artefact types for documenting contact between different groups: artefacts made from non-perishable materials, such as stone, various raw materials, clay and, later, metal. The actual range of traded commodities was obviously much wider and no doubt included wares that leave no trace in the archaeological record, such as furs, textiles, leather and leather articles, as well as foodstuffs. I shall not discuss other possible aspects of these contacts, such as the possible exchange of craftsmen, of individuals introducing a new technology to a particular region or the marriage and kinship ties between groups. These contacts will perhaps never be detected unless many more Linear Pottery cemeteries containing well preserved skeletal remains are uncovered in the future.

The idea that the commodity received for the lithic raw material from Szentgál and other wares may have been salt first occurred to me when I visited the excavation of the Bad Nauheim–Niedermörlen settlement. The finds from this site reflected surprisingly strong ties with Transdanubia. The Mörlener Bucht area is rich in haematite deposits,[265] yet, this red paint is not as rare as to form the basis of exchange relations. However, Bad Nauheim lies in an area rich in salt. Excavations conducted near Niedermörlen have brought to light the unique remains of extensive Celtic and Roman salt mining. W. Leidinger, a prehistorian studying the Neolithic remains of salt production in more northerly regions (Westphalia), has described in detail how the earliest Linear Pottery communities in that area produced salt by evaporation and cleaning.[266] Similarly, Th. Saile argues for the Early Neolithic exploitation of salt mines in Westphalia and Lower Saxony.[267] It is therefore possible that this easily transportable and valuable commodity, essential for the diet, for food preservation and for animal feeding, was exchanged for various articles from the Danube Valley. Nenad Tasić considered salt and the access to salt deposits, the regions having soils with a rich salt content and briny waters as one of the major factors in the Neolithization of the Balkans.[268] Trade in salt played an important role in the cultural development of this region and in its contacts with other areas in later periods too.[269]

Two negative examples must be mentioned in this respect. One concerns Hallstatt near Salzburg in the Salzkammergut, the Upper Austrian region rich in salt deposits. The distribution of Early Neolithic sites indicates that the migration route led along the northern Danube bank, through the Munich Basin to southwest Germany. Although lying closer to Transdanubia, the salt mines in Hallstatt were unknown and can thus be rejected as a possible source. This probably enhanced the importance of the Wetterau and Aldenhoven region. The other point is apparent from N. Tasić's map.[270] Transdanubia is a region expressly poor in salt: even the nearest salt deposits lie far away, in areas with which the Transdanubian farmers did not have particularly close contacts. The nearest salt mine to the south lay at Tuzla in Bosnia. We have seen that certain

[264] Neolithic exchange and contact relations were the theme of a round table conference held on November 30, 2002, in the Archaeological Institute of the Hungarian Academy of Sciences. Although I did not present the hypothesis outlined here, I learnt much about the nature of these contact relations from the debate, for which I am grateful to my colleagues both in Hungary and abroad. The papers read at the conference and the discussions will be published in volume 27 of *Antaeus*.

[265] *Schwitalla* (1999) 28.

[266] *Leidinger* (1997) 4–5.

[267] *Saile* (2001) 150-151

[268] *Tasić* (2000) 36.

[269] *Monah* (1991).

[270] *Tasić* (2000) 39.

features of the Starčevo culture in the Balaton area indicate that it had more or less severed its ties with the southern 'homeland', and it is therefore unlikely that salt had been acquired from that mine. The alkali lakes near Szarvas were no doubt exploited by the Körös and, later, the Alföld Linear Pottery communities for salt, but the distribution range of this source could not have been particularly extensive. Finally, one can mention Transylvania and its many salt deposits, whose distribution can be traced up to the Seret river. N. Tasić has noted that the richness of the Gura Baciului (Bácsi Torok) site can probably be attributed to the exploitation and trade of salt.[271] If this was indeed the case, it might be instructive to examine the Early Neolithic settlement patterns in South-East Europe in relation to salt resources since this too may have influenced the choice of settlement location, and the presence of import articles leaving a trace in the archaeological record received in exchange for this commodity may also set exchange relations in a new perspective. It is equally possible that certain features of the Alföld Linear Pottery development can be traced to the fact that the Alföld Linear Pottery groups had access to the Érmellék region and the Banat. The rich salt deposits in the eastern half of the Carpathian Basin, however, had no implications for Transdanubia since there were few contact with the east. We know that communities with a diet predominantly based on plant food cannot survive for long without salt. The 'negative evidence' would suggest that the Linear Pottery communities of Transdanubia sought to acquire salt from regions with which they were familiar, in part as a result of their pre-Neolithic contacts and in part from the knowledge acquired during their primary migrations – in other words, from the northwest.

Although there is nothing in the way of concrete evidence owing to the elusive nature of salt (unless clay vessels used for evaporation will be found on Neolithic sites), this would explain a number of yet little understood phenomena. One of these is the striking typological resemblance between the find assemblages from Transdanubia and Germany; another is the use of Szentgál radiolarite in areas, where good quality stone was available locally; yet a third is the long-term contact relations spanning not one, but several generations, as reflected in the finds from Bad Nauheim.

All this is no more than speculation, a hypothesis, similar to some of the other ideas presented in this book. This is hardly surprising, given that the study of the Early Neolithic is a field of prehistoric research characterized by two features: one the one hand, we have to struggle with the scarcity of data on the Mesolithic–Neolithic transition and the actual process of neolithization, and on the other, the state of research often changes from one day to the other – the latter making these studies a particularly exciting and dynamic field of research. It is my hope that the detailed publication of the finds from the Szentgyörgyvölgy–Pityerdomb site and the overview of the problems concerning the Neolithic transition in western Transdanubia will add yet another hue to the already colourful tapestry of this period.

[271] *Tasić* (2000) 40.

AFTERWORD

I had two main goals in writing this book. First, to provide as detailed a description as possible of the settlement features and the finds from Szentgyörgyvölgy–Pityerdomb, together with the conclusions that can be drawn from them. This is the first, almost completely excavated Transdanubian site from the formative Linear Pottery period; in terms of the pottery finds, the figural depictions, the lithics and the number of samples submitted to various analyses, the Pityerdomb settlement is an extremely rich site. The detailed publication of the site will enable colleagues studying the transition to the Neolithic to compare these finds with their own assemblages and to draw their own conclusions, perhaps differing from the ones presented here. My other goal was to set the site and its finds into the broader context of the transition in western Transdanubia – to describe the main elements of the transition typical to this region in the light of the findings from three micro-regions in western Transdanubia and the earliest sites in the Balaton region, together with a discussion of the region's relevance for the neolithization of Central Europe.

Western Transdanubia was a frontier, a contact zone at the dawn of the Neolithic; the two main protagonists were the indigenous hunter-gatherer-fisher groups controlling the Szentgál mine and the late Starčevo immigrants from the Balkans. The long interaction and mixing between these two communities led to changes in their material culture and lifeways. The mixed groups emerging from this peaceful co-existence were the early Linear Pottery communities.

I have argued that the Linear Pottery longhouse probably emerged in the area between the Drava and the Danube, perhaps in the contact zone in the Balaton region. The pottery and the figural representation in the northern Starčevo distribution underwent certain changes that can most likely be attributed to the cultural impacts from the indigenous population. When the water level of Lake Balaton rose, this indigenous hunter-gatherer population was forced to relocate its settlements to higher ground – the "early Linear Pottery" assemblages with few linear patterns (or none at all) from the Balaton region can be linked to this population. Most of the late Starčevo and early Linear Pottery settlements were contemporaneous and their occupants maintained contacts with each other, as shown by the finds from Pityerdomb, Vörs, Gellénháza, Sármellék, Kéthely and other sites.

Red radiolarite from the Szentgál mine was a commodity traded among the Mesolithic groups of Central Europe well before the Neolithic; the Starčevo communities between the Drava and the fringes of the culture's distribution too showed preference for this raw material. The use of Szentgál rock was almost exclusive in Transdanubia and in the neighbouring areas to the west, and although its frequency declined in more westerly and northerly regions, its distribution can be demonstrably linked to the early Linear Pottery expansion up to central Germany. Although we know little about what was received in exchange for this rock, it is possible that salt was one of these commodities. The archaeological record and the conclusions drawn from it all point to the importance of the western Transdanubian contact zone in the shift to food production in Central Europe.

In the lack of excavated sites, the great unknown in the model of the transition to the Neolithic in Transdanubia is the Mesolithic. While I was writing the final chapter of this book, my attention was drawn to a series of remarkable new discoveries in the Kapos Valley and in the basin of Lake Balaton that will perhaps prove the presence of the Mesolithic groups whose existence I inferred from the circumstantial evidence. However, the existence of this indigenous Mesolithic population can hardly be challenged, even if their settlements will not be found in the future (either because

they were destroyed already during the Neolithic or because they are now submerged), owing to their major impact on the Starčevo communities on the northern fringes of the culture's distribution. It is my conviction that even though some elements of the model presented here may be modified in the light of new discoveries (and I hope that research in this field will be enriched by many new finds), the main features of the process are essentially correct.

It is also my hope that there will be one other major change in Neolithic research in the light of more recent investigations in this field. I expect that there will be a change in archaeological discourse. It is my belief that certain earlier assumptions, such as the one positing an "empty Mesolithic landscape" will no longer be acceptable in a discussion on the transition to the Neolithic and that prehistoric research will realize the potentials for archaeological interpretation provided by drawing together the evidence offered by traditional typological studies, religious history, ethnography, palaeo-sociology, palaeo-psychology and palaeo-linguistics, as well as of pedology, palynology, macrobotany, archaeological dating, raw material sourcing and other analyses.

This realization will hopefully eliminate an unfortunate bias towards this discipline and a problem of legitimacy. Archaeology has traditionally been regarded as part of the historical sciences, even if various scientific analyses too offered a wealth of information on ancient environments and lifeways. More recently, however, there has been a tendency to claim that archaeology is no longer part of the humanities, but rather a discipline of the natural sciences. No matter how important these analyses are, they can only be used in combination with traditional archaeological data in order to paint as full a picture of the past as possible.

The other problem arises when archaeology, and the liberal arts in general, are judged from the perspective of the natural sciences. It is sometimes claimed that archaeology can hardly be regarded as a scientific discipline, seeing that its analytical methods are incidental and do not satisfy the basic criteria of science since the analyses and any accompanying measurements cannot be repeated. It is my belief that interpretations drawing together many strands of evidence make up for this shortcoming. The present study is perhaps an illustration that the convergence of the conclusions drawn from the evaluation of the settlement layout, the pottery, the cult finds and the scientific analyses can in a certain sense be regarded as repeated measurements. In this sense, the study of the Szentgyörgyvölgy–Pityerdomb site and of the Neolithic transition in western Transdanubia also provided fresh insights into the epistemological problems of a brief, but important period of prehistory.

ABBREVIATIONS

AAA = Arkhaiologika Analekta eks Athinou (Athens)
AAC = Acta Archaeologica Carpathica (Kraków)
AASzeged = Acta Antiqua et Archaeologica (Szeged)
ActaArchHung = Acta Archaeologica Academiae Scientiarum Hungaricae (Budapest)
ActaMN = Acta Musei Napocensis (Cluj)
ActaMP = Acta Musei Porolissensis (Zălau)
AI = Archaeologia Iugoslavica (Beograd)
AInf = Archäologische Informationen. Mitteilungen zur Ur- und Frühgeschichte (Tübingen)
AJA = American Journal of Archaeology (New York)
AJB = Das archäologische Jahr in Bayern (Stuttgart)
AKorr = Archäologisches Korrespondenzblatt (Mainz)
AmAn = American Anthropologist (Menasha, Wis.)
AnB = Analele Banatului. Serie nouă. Arheologie - istorie (Timişoara)
ANhM = Annalen des Naturhistorischen Museums in Wien (Wien)
AnnHM = Annales Historico-Naturales Musei Nationalis Hungarici (Budapest)
AP = Arheološki Pregled (Beograd)
APL = Analecta praehistorica Leidensis (Leiden)
ArchA = Archaeologia Austriaca (Wien)
Archaeolingua SerMin = Archaeolingua, series minor (Budapest)
ArchÉrt = Archaeologiai Értesítő (Budapest)
Arch. Nachr. Bl. = Archäologisches Nachrichtenblatt
ArchÖsterreichs = Archäologie Österreichs (Wien)
ArhMold = Arheologia Moldovei (Iaşi)
AS = Anatolian Studies (London)
ASlA = Dávnoveké Umenie Slovenska = Ars Slovaca Antiqua (Bratislava)
AuF = Ausgrabungen und Funde (Berlin)
BAM = Beiträge zur Ur- und Frühgeschichtlichen Archäologie des Mittelmeer-Kulturraumes (Bonn)
BAR = British Archaeological Reports (Oxford)
BAR IntSer = British Archaeological Reports. International series, supplementary (Oxford)
BCH = Bulletin de Correspondance Hellénique (Paris)
BIAA Monograph = British Institute of Archaeology at Athens monograph (Exeter)
BRGK = Bericht des Römisch-Germanischen Kommission (Berlin)
BROB = Berichten van de Rijksdienst voor het Oudheidkundig Bodemonderzoek in Nederland (Antwerpen)
BSA = British School (of Archaeology) at Athens, Annual (London)
BSA Studies = British School (of Archaeology) at Athens, studies (London)
BSA Suppl. = British School (of Archaeology) at Athens, supplementary (London)
BVbl = Bayerische Vorgeschichtsblätter (München)
DAF = Documents d'archéologie Française (Paris)
DissArch = Dissertationes archaeologicae ex Instituto Archaeologico Universitatis de Rolando Eötvös nominatae (Budapest)

DissPann = Dissertationes Pannonicae (Budapest)
DMÉ = A Debreceni Déri Múzeum Évkönyve (Debrecen)
DocPraehist = Documenta Praehistorica (previously: Poročilo …) (Ljubljana)
ERAUL = Études récherches archéologiques de l'Université de Liège (Liège)
FBBW = Fundberichte aus Baden-Württemberg (Stuttgart)
FolArch = Folia Archaeologica (Budapest)
FÖ = Fundberichte aus Österreich (Wien)
FtK = Földtörténeti Közlemények (Budapest)
FUFG = Forschungsberichte zur Ur- und Frühgeschichte (Wien)
GPM = Godišnik na Narodnija Arheologičeski Muzej Plovdiv (Plovdiv)
HOMÉ = A Herman Ottó Múzeum Évkönyve (Miskolc)
IPH = Inventaria praehistorica Hungariae (Budapest)
IstMitt = Istanbuler Mitteilungen (Tübingen)
JAA = Journal of Anthropological Archaeology (New York)
JAMÉ = A Nyíregyházi Jósa András Múzeum Évkönyve (Nyíregyháza)
JBBD = Jahresbericht der Bayerischen Bodendenkmalpflege (München)
JEA = Journal of European Archaeology (Aldershot)
JIES = The Journal of Indo-European Studies (Washington D.C.)
JIES monograph = The Journal of Indo-European Studies monograph (Washington D.C.)
JMV = Jahresschrift für Mitteldeutsche Vorgeschichte (Halle/Saale)
JSGU = Jahrbuch der Schweizerischen Gesellschaft für Ur- und Frühgeschichte (Basel)
JVM = Jelentés a Veszprémi Múzeum … évi állapotáról (Veszprém)
JWP = Journal of World Prehistory (New York)
KSIAKiev = Kratkie Soobščeniâ Instituta Arheologii AN SSSR (Kiev)
MacAA = Macedoniae Acta Archaeologica (Prilep)
MÁFIJ = A Magyar Állami Földtani Intézet jelentése az … évről (=Annual Report of the Geological Institute for the year …) (Budapest)
MAGW = Mitteilungen der Anthropologischen Gesellschaft in Wien (Wien)
MCA = Materiale şi Cercetări Arheologice (Bucureşti)
MhBV = Materialhefte zur Bayerischen Vorgeschichte (Kallmünz)
MittArchInst = Mitteilungen des Archäologischen Instituts der Ungarischen Akademie der Wissenschaften (Budapest)
MUAG = Mitteilungen des Österreichischen Arbeitsgemeinschaft für Ur- und Frühgeschichte (Wien)
NAR = Norwegian Archaeological Review (Oslo)
NNU = Nachrichten aus Niedersachsens Urgeschichte (Hildesheim)
OA = Opuscula Archaeologica (Zabreb)
OJA = Oxford Journal of Archaeology (Oxford)
OZ = Osjecki Zbornik (Osijek)
PA = Památky Archeologické (Praha)
Poročilo = Poročilo o Raziskovanju Paleolitika, Neolitika in Eneolitika v Sloveniji (Ljubljana)
PPS = Proceedings of the Prehistoric Society (Cambridge)
Pravek NŘ = Pravek. Sborník Príspevků Moravskych a Slezskych Archeologů. Nova Řada. (Brno)

PV = Přehled Výzkumů (Brno)
PZ = Prähistorische Zeitschrift (Berlin)
RégFüz = Régészeti füzetek (Budapest)
RossArh = Rossijskaja Arheologija (Moskva)
RVM = Rad Vojvođanskih Muzeja (Novi Sad)
SCIV = Studii şi Cercetări de Istorie Veche (Bucureşti)
SlA = Slovenská Archeológia (Bratislava)
SMK = Somogyi Múzeumok Közleményei (Kaposvár)
SzMMÉ = A Szolnok Megyei Múzeumok Évkönyve (Szolnok)
SP = Studia Praehistorica (Sofia)
StudArch = Studia Archaeologica (Budapest)
ŠtZ = Študijné Zvesti Archeologického Ústavu Slovenskej Akademie Vied (Nitra)
TapolcaVMK = A Tapolcai Városi Múzeum Közleményei (Tapolca)
UPA = Universitätsforschungen zur prähistorischen Archäologie (Bonn)
VAH = Varia Archaeologica Hungarica (Budapest)
VAMZ = Vjesnik Arheološkog Muzeja u Zagrebu (Zagreb)
WA = World Archaeology (London)
WMBH = Wissenschaftliche Mitteilungen des Bosnisch- Herzegovinischen Landesmuseums. A. Archäologie (Sarajevo)
ZalaiMúz = Zalai Múzeum (Zalaegerszeg)
ZfA = Zeitschrift für Archäologie (Berlin)
ZRNM = Zbornik Radova Narodnog Muzeja u Beogradu (Beograd)

BIBLIOGRAPHY

Alexander (1978) *J. Alexander:* Frontier studies and the earliest farmers in Europe. In: D. Green – C. Haselgrove – M. Spriggs (eds): Social Organisation and Settlement. BAR 47. Oxford 1978: 13–29.

Alinei (2001) *M. Alinei:* Continuity from Palaeolithic of the Indo-European and Uralic populations in Europe: linguistic, archaeological and genetic evidence. In: M. Otte (ed.) UISPP Handbook. Liège, Sept 2001. Séction mésolithique. Liège 2001: 189.

Allaby (2000) *R. Allaby:* Wheat domestication. In: C. Renfrew – K. Boyle (eds): Archaeogenetics: DNA and the population prehistory of Europe. McDonald Institute monographs. Cambridge 2000: 321–324.

Alram-Stern (1996) *E. Alram-Stern:* Die ägäische Frühzeit 2. Serie. Forschungsbericht 1975–1993. 1: Das Neolithikum in Griechenland. Wien 1996.

Alram-Stern (2000) *E. Alram-Stern:* Zum Forschungsstand des Mittel- und Südgriechischen Neolithikums. In: St. Hiller – V. Nikolov (eds): Karanovo III: Beiträge zum Neolithikum Südosteuropas. Wien 2000: 245–252.

Ammermann – Cavalli-Sforza (1973) *A. J. Ammermann – L. L. Cavalli Sforza:* A population model for the diffusion of the early farming in Europe. In: C. Renfrew (ed.): The Explanation of Culture Change. Models in prehistory. London: 343–357.

Ammermann – Cavalli-Sforza (1984) *A. J. Ammermann – L. L. Cavalli Sforza:* The Neolithic Transition and Genetics of Population in Europe. Princeton 1984.

Andrić (2001) *M. Andrić:* The holocene vegetation dynamics and the formation of Neolithic and present-day Slovenian landscape. DocPraehist 28 (2001) 133–175.

Andreou – Fotiadis – Kotsakis (2001) *S. Andreou – M. Fotiadis – K. Kotsakis:* Review of Aegean prehistory: the Neolithic and the Bronze Age of Northern Greece. In: T. Cullen (ed.): Aegean Prehistory. A review. Boston 2001: 259–327.

Angel (1984) *J. L. Angel:* Health as a crucial factor in the changes from hunting to developed farming in the Eastern Mediterranean. In: M. N. Cohen – G. J. Armelagos (eds): Palaeopathology at the Origins of Agriculture. New York 1984: 51–73.

Anthony (1992) *D. W. Anthony*: Migration in archaeology: the baby and the bathwater. AmAn 1992/4: 895–914.

Anthony (1997) *D. W. Anthony:* Prehistoric migration as social process. In: J. Chapman – H. Hamerow (eds): Migrations and Invasions in Archaeological Explanation. BAR IntSer 664. Oxford 1997: 21–32.

Antl-Weiser (1995) *W. Antl-Weiser:* Die spätpaläolithischen Funde von Horn–Galgenberg, Niederösterrich. ArchA 79 (1995) 1–62.

Antl (1999) *W. Antl*: "Neolithisierung". MAGW 129 (1999) 33–44.

Arandjelović-Garašanin (1954) *D. Arandjelović-Garašanin:* Starčevačka kultura. Ljubljana 1954. *see also: Garašanin*

Aslanis (1992a) *I. Aslanis:* I proistoria tis Makedonias I. I neolithiki epochi. Athina 1992.

Aslanis (1992b) *I. Aslanis:* Die kulturelle Stellung Zentralmakedoniens in der Vorgeschichte unter dem Einfluss seiner Naturgrenzen. In: M. Garašanin – D. Srejović (eds).: Hommage à Nikola Tasić. Balcanica 23 (1992) 199–220.

Babović (1988) *L. Babović:* Vinogradi–Bečej. In: D. Srejović (ed.): The Neolithic of Serbia. Belgrade 1988: 103–105.

Babović (1992) *L. Babović:* Rezultati detaljnog rekognosčiranja neolitskih lokaliteta u sirem području Bečeja. RVM 34 (1992) 43–84.

Bachofen (1978) *J. J. Bachofen:* A mítosz és az ősi társadalom. (Versuch über die Gräbersymbolik der Alten; Das Mutterrecht; Die Sage von Tanaquil.) Budapest 1978.

Bácskay (1976) *E. Bácskay:* Early Neolithic Chipped Stone Implements in Hungary. DissArch 4. Budapest 1976.

Bácskay (1982) *E. Bácskay*: A magyar holocénstratigráfia régészeti dokumentációs pontjai a Dunántúlon (Archaeological documentary sites of Hungarian holocene stratigraphy in Transdanubia). MÁFIJ 1980 (1982) 543–552.

Bácskay – Simán (1987) *E. Bácskay – K. Simán:* Some remarks on the chipped stone industries of the earliest neolithic populations in present Hungary. In: J. K. Kozłowski – St. K. Kozłowski (eds): Chipped Stone Industries of the Early Farming Cultures in Europe. Warszawa 1987: 107–130.

Bailey (1983) *G. Bailey:* Spatial organisation of the subsistence economy. In: G. Bailey (ed.): Hunter-gatherer Economy in Prehistory. Cambridge 1983 59–63.

Bailey (1994) *D. Bailey:* Reading prehistoric figurines as individuals. WA 25 (1994) 321–331.

Bailey (1999) *D. Bailey*: The built environment: pit-huts and houses in the Neolithic. DocPraehist 26 (1999) 153–162.

Bailey (2000) *D. Bailey:* Balkan Prehistory. London – New York 2000.

Bakalakis – Sakellariou (1981) *G. Bakalakis – A. Sakellariou:* Paradimi. Heidelberger Akademie der Wissenschaften. Internationale Interakademische Kommission für die Erforschung der Vorgeschichte des Balkans, Monographien 2. (ed.: V. Milojčić). Mainz 1981.

Bakay (1989) *K. Bakay:* Feltárul a múlt? A múlt jövője [The future of the past]. Budapest 1989.

Balkan-Atli et al. (1999) *N. Balkan-Atli – D. Binder – M. C. Cauvain – E. Biçakçi – G. der Aprahamian – C. Kuzucuoğlu:* Obsidian: sources, workshops and trade in Central Anatolia. In: M. Özdoğan – N. Başgelen (eds): Neolithic Turkey. Istanbul 1999 133–145.

Balzer (1987) *B. Balzer:* Die Feuersteinindustrien der frühneolithischen "Keramik"-Kulturen in der polnischen Tiefebene. In: J. K. Kozłowski – St. K. Kozłowski (eds.): Chipped Stone Industries of the Early Farming Cultures in Europe. Warszawa 1987: 331–350.

Bánffy (1986a) *E. Bánffy:* Bemerkungen zur Methodologie der Erforschung vorgeschichtlicher figuraler Plastik. PZ 61 (1986) 152–157.

Bánffy (1986b) *E. Bánffy:* House models from neolithic Hungary – Attempt at a general interpretation. In: Archaeological "Objectivity" in Interpretation, Preliminary Volume to World Archaeological Congress. Southampton–London, Vol. 2 1986: 58–65.

Bánffy (1990–91) *E. Bánffy:* Cult and archaeological context in Central and South East Europe in the Neolithic and Chalcolithic. Antaeus 19–20 (1990–91) 183–250.

Bánffy (1994) *E. Bánffy:* Anthropomorphic figurines in cult corners of neolithic houses. In: A. C. Ambrosi (ed.): La statuaria antropomorfa in Europa dal neolitico alla romanizzazione. Atti del congresso La Spezia–Pontremoli 1988. La Spezia 1994: 41–46.

Bánffy (1996a) *E. Bánffy:* Neolithic and Copper Age settlements at Hahót and Zalaszentbalázs. In: B. M. Szőke (ed.): Archaeology and Settlement History in the Hahót Basin SW-Hungary. Antaeus 22 (1996) 35–50.

Bánffy (1996b) *E. Bánffy:* Kora rézkori körárok Balatonmagyaród–Hídvégpusztáról [Early chalcolithic circular ditch at Balatonmagyaród–Hídvégpuszta]. In: L. Költő – L. Vándor (eds): Évezredek üzenete a láp világából (Régészeti kutatások a Kis-Balaton területén 1979–1992) [Message from the moorland. Archaeological investigations in the Little Balaton region]. Kaposvár–Zalaegerszeg 1996: 21–22.

Bánffy (1996c) *E. Bánffy:* Early Chalcolithic settlement at Zalaszentbalázs–Szőlőhegyi mező. In: B. M. Szőke (ed.): Archaeology and Settlement History in the Hahót Basin SW-Hungary. Antaeus 22 (1996) 71–108.

Bánffy (1997) *E. Bánffy:* Cult Objects of the Lengyel Culture. Connections and interpretation. Archaeolingua SerMin 7. Budapest 1997.

Bánffy (1998) *E. Bánffy:* The origin of an imaginary animal figure type in the Lengyel culture. In: P. Anreiter et al. (eds): Man and the Animal World. Studies in archaeozoology, archaeology, anthropology and palaeolinguistics in memoriam Sándor Bökönyi. Archaeolingua 8. Budapest 1998: 55–64.

Bánffy (1999) *E. Bánffy:* Újkőkor, rézkor. In: A. Vaday – E. Bánffy – L. Bartosiewicz – K. T. Biró – F. Gogăltan – F. Horváth – A. Nagy: Kompolt–Kistér. Újkőkori, bronzkori, szarmata és avar lelőhely. Leletmentő ásatás az M3 nyomvonalán (A Neolithic, Bronze Age, Sarmatian and Avar site. Rescue excavation at the M3 motorway). Eger 1999: 13–170.

Bánffy (2000a) *E. Bánffy:* The late Starčevo and the earliest Linear Pottery groups in Western Transdanubia. In: M. Budja (ed.): 7th Neolithic Studies. DocPraehist 27 (2000) 173–185.

Bánffy (2000b) *E. Bánffy:* Neue Daten zur Entstehung der Bandkeramik. In: St. Hiller – V. Nikolov (eds.): Karanovo III: Beiträge zum Neolithikum in Südosteuropa. Wien 2000: 375–382.

Bánffy (2000c) *E. Bánffy:* Starčevo und/oder LBK? In: H.-J. Beier (ed.): Varia Neolithica I. Beiträge zur Ur- und Frühgeschichte Mitteleuropas 22. Weissbach 2000: 47–60.

Bánffy (2001) *E. Bánffy:* Neue Funde der Starčevo-Kultur in Südtransdanubien. In: F. Draşovean (ed.): Festschrift für Gheorghe Lazarovici. Timişoara 2001: 41–58.

Bánffy (2002a) *E. Bánffy:* Emberkezes edény a vonaldíszes kultúra kialakulásának idejéből (Ein Gefäß mit Menschenhand-Darstellung aus der Entstehungsphase der Linienbandkeramik). In: 50 éves a zalaegerszegi Göcseji Múzeum. ZalaiMúz 10 (2001[2002]) 45–52.

Bánffy (2002b) *E. Bánffy:* Eine Tierfigur aus der Entstehungsphase der Bandkeramik. In: E. Bánffy (ed.): Prehistoric Studies. In memoriam Ida Bognár-Kutzián. Antaeus 25 (2002) 205–219.

Bánffy (2002c) *E. Bánffy:* Notes on the connection between human and zoomorphic representations in the Neolithic. In: P. Biehl – F. Bertemes (eds): The Archaeology of Cult. Symbols of the other world. Archaeolingua 13. Budapest 2001 53–71.

Bánffy (2002d) *E. Bánffy:* A stuck process: urbanisation in the Carpathian Basin. In: K. Jones-Bley – D. G. Zdanovich (eds): Complex Societies of Central

Eurasia from the 3rd to the 1st Millennium BC. Regional specifics in light of global models. JIES monograph 45. Washington D.C. 2002: 492–503.

Bánffy (in press) *E. Bánffy:* The neolithisation of the Carpathian Basin: the boundary area in its western part. In: V. Heyd – M. Bartelheim (eds): Transitions. Freiberg.

Bánffy et al. (in press) *E. Bánffy (ed.):* Archaeology and Settlement History in the Kerka Valley, South-West Hungary. Antaeus 28.

Banner (1943) *J. Banner:* Az újabbkőkori lakóházkutatás mai állása Magyarországon (L'état actuel de la recherche de l'habitations néolithique en Hongrie). ArchÉrt Ser. III:4 (1943) 1–28.

Barber (1992) *E. J. W. Barber:* Prehistoric Textiles – The development of cloth in the Neolithic and Bronze ages with special reference to the Aegean. New Jersey 1992.

Barbujani – Chikhi (2000) *G. Barbujani – L. Chikhi:* Genetic populaton structure of Europeans inferred from nuclear and mitochondrial DNA polimorphisms. In: C. Renfrew – K. Boyle (eds): Archaeogenetics: DNA and the population prehistory of Europe. McDonald Institute monographs. Cambridge 2000: 119–129.

Barbujani – Bertorelle (2001) *G. Barbujani – G. Bertorelle:* Genetics and the population history of Europe. Proceedings of the Natural Academic Sciences, USA 98/1. January 2, 2001: 22–25.

Baroni et al. (1990) *C. Baroni – P. Biagi – R. Nisbet – R. G. Scaife:* Laghetti del Crestoso: a high altitude Castelnovian camp in its environmental setting (Brescia – Northern Italy). In: P. Biagi (ed.): The Neolithisation of the Alpine Region. Monographie di "Natura Bresciana" 13. Brescia 1990: 43–51.

Bar-Yosef (1984) *O. Bar-Yosef:* Near East. In: H. Müller-Karpe (ed.): Neue Forschungen zur Altsteinzeit. Forschungen zur Allgemeinen und Vergleichenden Archäologie. (AVA) München 1984: 233–298.

Bar-Yosef (1997) *O. Bar-Yosef:* Symbolic expressions in later prehistory of the Levant: Why are they so few? In: M. D. Conkey – O. Soffer – D. Stratman (eds): Beyond Art: Pleistocene image and symbol. San Francisco 1997: 161–187.

Bar-Yosef – Belfer-Cohen (1989) *O. Bar-Yosef – A. Belfer-Cohen:* The origins of sedentism and farming communities in the Levant. JWP 3/4 (1989) 447–498.

Bar-Yosef – Meadow (1995) *O. Bar-Yosef – R. H. Meadow:* The origins of agriculture in the Near East. In: D. T. Price – A. B. Gebauer (eds): Last Hunters – First Farmers. The perspectives on the prehistoric transition to agriculture. School of American Research, Advanced Seminar Series. Santa Fe 1995: 39–94.

Batović *(1966) S. Batović:* Stariji neolit u Dalmacii. Zadar 1966.

Behrens (1964) *H. Behrens:* Die neolithisch-frühmetallzeitlichen Tierskelettfunde der Alten Welt. Berlin 1964.

Beltran (1982) *A. Beltran:* Rock Art of the Spanish Levant. Cambridge 1982.

Benac (1973) *A. Benac:* Obre I – a neolithic settlement of the Starčevo-Impresso and Kakanj cultures at Raskaršce. WMBH 3 (1973) 327–430.

Bender (1975) *B. Bender:* Farming in Prehistory. From hunter-gatherer to food-producer. London 1975.

Bender (1985) *B. Bender:* Prehistoric developments in the American Mid-Continent and in Brittany, northwest France. In: T. D. Price – J. A. Brown (eds): Prehistoric Hunter-Gatherers: the emergence of cultural complexity. New York 1985: 21–57.

Berciu (1961) *D. Berciu:* Contribuţii la problemele neoliticului în România în lumina noilor cercetări. Bucureşti 1961.

Berg – Maurer (1998) *F. Berg – H. Maurer:* Idole. Kunst und Kult im Waldviertel vor 7000 Jahren. Höbartsmuseum der Stadt Horn. Horn 1998.

Berka (1926) *J. Berka:* Plastik der Bandkeramik. Dissertationes, University of Vienna. Wien 1926.

Bernhardt – Hampel (1992) *G. Bernhardt – A. Hampel:* Vorbericht zu einem ältestlinienbandkeramischen Siedlungsplatz in Frankfurt–Niedereschbach. Germania 70 (1992) 1–16.

Bertemes – Biehl (2001) *F. Bertemes – P. F. Biehl:* The archaeology of cult and religion. Symbols of the other world. An introduction. In: F. Bertemes – P. F. Biehl (eds). The Archaeology of Cult and Religion. Archaeolingua 13. Budapest 2001: 11–24.

Berzsényi – Dálnoki (in press) *B. Berzsényi – O. Dálnoki:* Archaeobotanikai vizsgálatok – a Szentgyörgyvölgy–Pityerdomb (Zala megye) neolit korú lelőhely földmintáinak elemzése (Archaeobotanical investigations of the soil samples from the neolithic site Szentgyörgyvölgy–Pityerdomb, County Zala). In: E. Bánffy (ed.): Archaeology and Settlement History in the Kerka Valley, South-West Hungary. Antaeus 28.

Bettinger (2001) *R. L. Bettinger:* Holocene hunter-gatherers. In: G. M. Feinman – T. D. Price (eds): Archaeology at the Millennium. A sourcebook. New York: 137–195.

Biagi (2001) *P. Biagi:* Some aspects of the late Mesolithic and early neolithic periods in Northern Italy. In: R. Kertész – J. Makkay (eds): From the Mesolithic to the Neolithic. Proceedings of the International Archaeological Conference held in Szolnok 1996. Archaeolingua 11. Budapest 2001: 71–88.

Biagi – Starnini (1999) *P. Biagi – E. Starnini:* Some aspects of the neolithisation of the Adriatic region. Atti Soc. Protost. Friuli–Venezia Giulia 11 (1999) 7–17.

Biagi – Voytek (1994) *P. Biagi – B. Voytek:* The Neolithisation of the Trieste Karst in North-Eastern Italy and its neighbouring countries. JAMÉ 36 (1994) 63–73.

Biagi – Starnini – Voytek (1993) *P. Biagi – E. Starnini – B. Voytek:* The late mesolithic and early neolithic settlement of Northern Italy: a recent consideration. Poročilo 21 (1993) 45–67.

Biehl (1996) *P. F. Biehl:* Symbolic communication systems: symbols on anthropomorphic figurines of the Neolithic and Chalcolithic from South-East Europe. JEA 1996/4: 153–176.

Biehl (1997) *P. F. Biehl:* Overcoming the "Mother-Goddess-movement": a new approach to the study of human representations. Latvijas zinatum Akademijas Vestis 1997: 59–67.

Binford (1968) *L. B. Binford:* Post-Pleistocene adaptations. In: S. R. Binford – L. B. Binford (eds): New Perspectives in Archaeology. Chicago 1968: 313–341.

Binford (1971) *L. B. Binford:* Post-Pleistocene adaptations. In: St. Stuever (ed.): Prehistoric Agriculture. New York 1971: 22–49.

Bintliff (1991) *R. E. Bintliff:* Post-Modernism, Rhetoric and Scholasticism at TAG: the current state of British Archaeology Theory. Antiquity 65 (1991) 274–278.

Bintliff (1993) *R. E. Bintliff:* Why Indiana Jones is smarter than the post-processualists. NAR 26 (1993) 91–100.

Biró – Dobosi (1991) *K. Takács-Biró – V. Tolnai-Dobosi:* LITOTHECA – The comparative raw material collection of the Hungarian National Museum. Catalogue. Budapest 1991.

Biró – Regenye (1991) *K. Biró – J. Regenye:* Prehistoric workshop and exploitation site at Szentgál–Tűzköveshegy. ActaArchHung 43 (1991) 337–375.
see also: T. Biró

Blanchet et al. (1993) *J.-C. Blanchet – A. Bulard – C. Constantin – D. Mordant – J. Tarrète* (eds): Le Néolithique au quotidien. Actes du XVIe colloque interrégional sur le Néolithique (Paris, 5 et 6 novembre 1989). DAF 39. Paris 1993.

Bodor (1987) *E. Bodor:* Formation of the Lake Balaton palynological aspects. In: M. Pécsi – L. Kordos (eds): Holocene Environment in Hungary. Ottawa–Budapest 1987: 77–80.
see also: *Nagy-Bodor*

Boehlicke (1982) *U. Boehlicke:* Gruben und Häuser: Untersuchungen zur Struktur bandkeramischer Hofplätze. In: J. Pavúk (ed.): Siedlungen der Kultur mit Linearkeramik in Europa. Internationales Kolloquium Malé Vozokaný. Nitra 1982: 17–28.

Boehlicke et al. (1988) *U. Boehlicke – J. v. Brandt – J. Lüning – P. Stehli – A. Zimmermann:* Der bandkeramische Siedlungsplatz Langweiler 8, Gemeinde Aldenhoven, Kr. Düren. Rheinische Ausgrabungen 28. Bonn 1988.

Boehlicke et al. (1997) *U. Boehlicke – K. H. Deutmann – J. Lüning – F. W. V. Schmidt – P. Stehli:* Die bandkeramische Siedlungsplatz Aldenhoven 3, Kr. Düren. In: J. Lüning (ed.): Studien zur neolithischen Besiedlung der Aldenhovener Platte und ihrer Umgebung. Rheinische Ausgrabungen 43. Bonn 1997: 1–130.

Boyadziev (1995) *Y. Boyadziev:* Chronology in Prehistoric Cultures in Bulgaria. In: D. W. Bailey–I. Panayotov (eds): Prehistoric Bulgaria. Monographs in World Archaeology 22. Madison, Wisconsin (1995) 149–191

Bogdanović (1988) *M. Bogdanović:* Architecture and structural features at Divostin. In: A. McPherron – D. Srejović (eds): Divostin and the Neolithic of Central Serbia. Pittsburgh, Pa 1988: 35–141.

Bogdanović (1996) *M. Bogdanović:* Neolitska naselja u Grivcu. Glasnik Srpskog Arheološkog Društva 11 (1996) 27–40.

Bogucki (1982) *P. I. Bogucki:* Early Neolithic Subsistence and Settlement in the Polish Lowlands. BAR IntSer 150. Oxford 1982.

Bogucki (1988) *P. Bogucki:* Forest Farmers and Stockherders. Early agriculture and its consequences in North-Central Europe. Cambridge 1988.

Bogucki (2001) *P. Bogucki:* Recent research on the early farming of Central Europe. DocPraehist 28 (2001) 85–97.

Bonsall et al. (1997) *C. Bonsall – R. Lennon – C. McSweeney – C. Stewart – D. Harkness – V. Boroneanț – L. Bartosiewicz – R. Payton – J. Chapman:* Mesolithic and early neolithic in the Iron Gates: a paleodietary perspective. EJA 5/1 (1997) 50–92.

Bonsall (2000) *C. Bonsall (ed.):* The Iron Gate in Prehistory. Handbook of the papers of the symposium in Edinburgh, 30. March–2. April 2000.

Bonsall et al. (2000) *C. Bonsall – G. Cook – R. Lennon – D. Harkness, – M. Scott – L. Bartosiewicz – K. McSweeney:* Stable isotopes, radiocarbon and the Mesolithic-Neolithic transition in the Iron Gates. DocPraehist 27 (2000) 119–132.

Borić (1999) *D. Borić:* Places that created time in the Danube Gorges and beyond, c. 9000–5500 BC. DocPraehist 26 (1999) 41–70.

Boroneanț (1970) *V. Boroneanț:* La période epipaléolithique sur la rive roumaine des Portes de fer du Danube. PZ 45/1 (1970) 1–25.

Boroneanț (1989) *V. Boroneanț:* Thoughts on the chronological relations between the Epi-Palaeolithic and the Neolithic of the Lower Danube. In: C. Bonsall (ed.): The Mesolithic of Europe. Proceedings of the Third International Symposium. Edinburgh 1989: 475–480.

Boroneanț (1990) *V. Boroneanț:* La site de Schela Cladovei: problèmes posés par la transition de la Criş-Starčevo à la culture Vinča. In: D. Srejović – N. Tasić (eds): Vinča and its World. International symposium: The Danubian region from 6000 to 3000 BC. Beograd 1990: 143–147.

Bottema (1974) *S. Bottema:* Late Quaternary Vegetation History of Northwestern Greece. Groningen 1974.

Boyadziev (1995) *Y. Boyadziev:* Chronology of prehistoric cultures in Bulgaria. In: D. W. Bailey – I. Panayotov (eds): Prehistoric Bulgaria. Monographs in World Archaeology 22. Madison, Wis. 1995: 149–191.

Bökönyi (1969) *S. Bökönyi:* A Lepenski Vir-i őstelep gerinces faunája (The vertebrate fauna of the prehistoric settlement at Lepenski Vir). ArchÉrt 96 (1969) 157–160.

Bökönyi (1970) *S. Bökönyi:* Animal remains from Lepenski Vir. Science 167 (1970) 1702–1704.

Bökönyi (1973) *S. Bökönyi:* Stock breeding. In: D. Theokharis (ed.): Neolithic Greece. Athens 1973: 165–178.

Bökönyi (1974) *S. Bökönyi:* History of Domestic Mammals in Central and Eastern Europe. Budapest 1974.

Bökönyi (1975) *S. Bökönyi:* Die Tierwirbelfauna. In: D. Srejović: Lepenski Vir. Eine vorgeschichtliche Geburtstätte europäischer Kultur. Bergisch Gladbach 1975: 244–249.

Bökönyi (1988) *S. Bökönyi:* Környezeti és kulturális hatások késő neolitikus Kárpát-medencei és balkáni lelőhelyek csontanyagán [Environmental and Cultural Impacts in the Bone Material of Sites from the Carpathian Basin and from the Balkans]. Budapest 1988.

Bradley (2000) D. G. Bradley: Mitochondrial diversity and origins of domestic livestock. In: C. Renfrew – K. Boyle (eds): Archaeogenetics: DNA and the population prehistory of Europe. McDonald Institute Monographs. Cambridge 2000: 315–320.

Bradley (1984) *R. Bradley:* The Social Foundations of Prehistoric Britain. London 1984.

Bradley (2001) *R. Bradley:* Orientations and origins: a symbolic dimension to the long house in neolithic Europe. Antiquity 75 (2001) 50–56.

Braidwod (1960) *R. J. Braidwood:* The agricultural revolution. Scientific American 203 (1960) 130–142.

Breunig (1987) *P. Breunig:* 14C-Chronologie des Vorderasiatischen, Südost- und Mitteleuropäischen Neolithikums. Fundamenta A 13. Köln 1987.

Bring-Kloke (1992) *H. Bring-Kloke:* Drei Siedlungen der Linienbandkeramik in Niederbayern. Studien zu den Befunden und zur Keramik von Alteglofheim–Köfering, Landshut–Sallmansberg und Straubing–Lerchenhaid. Internationale Archäologie A 10. Buch am Erlbach 1992.

Brukner (1960) *B. Brukner:* Baštine – Obrež – Srem – naselje. AP 2 (1960) 18–24.

Brukner (1966) *B. Brukner:* Die Tardenoisien Funde Peres bei Hajdukovo und aus Bačka Palanka und das Problem der Beziehungen zwischen dem Mesolithikum und präkeramischen Neolithikum im Donaugebiet. AI 7 (1966) 1–12.

Brukner (1974) *B. Brukner:* Rani neolit. In: B. Brukner – B. Jovanović – N. Tasić: Praistoria Voivodine. Novi Sad 1974: 29–68.

Brukner (1982) *B. Brukner:* Ein Beitrag zur Formierung der neolithischen und äneolithischen Siedlungen im jugoslawischen Donaugebiet. In: D. Pappenfuss – V. M. Strocka (eds): Palast und Hütte. Beiträge zur Bauen und Wohnen im Altertum. Mainz 1982: 141–151.

Budja (1993) *M. Budja:* The neolithisation of Europe. The Slovenian aspect. Poročilo 21 (1993) 163–193.

Budja (1994) *M. Budja:* Neolithisation in Slovenia. JAMÉ 36 (1994) 75–78.

Budja (1996) *M. Budja:* Neolithisation in the Caput Adriae region: between Herodotus and Cavalli-Sforza. Poročilo 23 (1996) 61–76.

Budja (1999) *M. Budja:* The transition to farming in Mediterranean Europe – an indigenous response. DocPraehist 26 (1999) 119–141.

Budja (2001) *M. Budja:* The transition to farming in Southeast Europe. DocPraehist 28 (2001) 27–47.

Burov (1995) *G. M. Burov:* Exploitation of Marine resources during the prehistoric periods. In: A. Fischer (ed.) 319–323.

Burov (1999) *G. M. Burov:* Die mesolithischen Schlittenformen in Nordosteuropa. In: E. Cziesla – Th. Kersting – St. Pratsch (eds): Den Bogen spannen… Festschrift für Bernhard Gramsch zum 65. Geburtstag. Beiträge zur Ur- und Frühgeschichte Mitteleuropas 20. Weissbach 1999: 117–136.

Buttler – Haberey (1936) *W. Buttler – W. Haberey:* Die bandkeramische Ansiedlung bei Köln–Lindenthal. Römisch-Germanische Forschungen 11. Berlin – Leipzig 1936.

Cauvain (1994) *J. Cauvain:* Naissance des divinités. Naissance d'agriculture. La révolution des symboles du Néolithique. Paris 1994.

Cauvain – Aurenche – Balkan-Atli (1999) *J. Cauvain – O. Aurenche – N. Balkan-Atli:* The Pre-pottery site at Cafer Höyük. In: M. Özdoğan – N. Başgelen (eds): Neolithic in Turkey. The cradle of civilization. New discoveries. Istanbul 1999: 87–103.

Cavalli-Sforza (2000) *L. Cavalli-Sforza:* Genes, peoples and languages. London 2000.

Chaix (1997) *L. Chaix:* La transition méso-néolithique: quelques données d'archéozoologie dans les Alpes du Nord et le Jura. In: Ch. Jeunesse (ed.): Le néolithique Danubien et ses marges entre Rhin et Seine. 22. Colloque Interrégional sur le Néolithique. Strasbourg 1995. Cahiers de l'Association pour la Promotion de la Récherche Archéologique en Alsace. Suppl. 3. Strasbourg 1997: 191–196.

Chapman (1981) *J. C. Chapman:* The Vinča Culture of South East Europe. Studies in chronology, economy and society. BAR IntSer 117 I–II. Oxford 1981.

Chapman (1989a) *J. C. Chapman:* The early Balkan village. In: S. Bökönyi (ed.): Neolithic of Southeastern Europe and its Near Eastern Connections. VAH 2. Budapest 1989: 33–53.

Chapman (1989b) *J. C. Chapman:* Demographic trends in Neothermal South-east Europe. In: C. Bonsall (ed.): The Mesolithic in Europe. Edinburgh 1989: 500–515.

Chapman (1991) *J. C. Chapman:* The creation of social arenas in the Neolithic and Copper Age of South-East Europe: the case of Varna. In: P. Garwood et al. (eds):

Sacred and Profane: Proceedings of a conference on archaeology, ritual and religion. Oxford 1991: 152–171.

Chapman (1993) *J. C. Chapman:* Social power in the Iron Gates Mesolithic. In: J. Chapman – P. Dolukhanov (eds): Cultural Transformations and Interactions in Eastern Europe. Aldershot 1993: 71–122.

Chapman (1994a) *J. C. Chapman:* Social power in the early farming communities of Eastern Hungary – perspectives from the Upper Tisza region. JAMÉ 36 (1994) 79–99.

Chapman (1994b) *J. C. Chapman:* The origins of farming in southeast Europe. Préhistoire Européenne 6 (1994) 133–156.

Chapman (2000) *J. C. Chapman:* Fragmentation in Archaeology. People, places and broken objects in the prehistory of Southern Europe. London – New York 2000.

Chapman (2001a) *J. C. Chapman:* The fractality of personal relations in the Mesolithic and Neolithic South East Europe. In: R. Kertész – J. Makkay (eds): From the Mesolithic to the Neolithic. Proceedings of the International Archaeological Conference held in the Damjanich Museum of Szolnok, Sept. 22–27, 1996. Archaeolingua 11. Budapest 2001: 145–165.

Chapman (2001b) *J. C. Chapman:* Intentional fragmentation in the Neolithic and Copper Age of south-east Europe: incised signs and pintaderas. In: F. Draşovean (ed.): Festschrift für Gheorghe Lazarovici. Timişoara 2001: 217–243.

Cherry (1981) *J. F. Cherry:* Pattern and process in the earliest colonisation of the Mediterranean Islands. PPS 47 (1981) 41–68.

Cherry (1990) *J. F. Cherry:* The first colonisation of the Mediterranean Islands: a review of latest research. Journal of Mediterranean Arch. 3/2 (1990) 145–221.

Childe (1928) *V. G. Childe:* The Most Ancient East: The oriental prelude to European prehistory. London 1928.

Childe (1929) *V. G. Childe:* The Danube in Prehistory. Oxford 1929.

Childe (1949) *V. G. Childe:* Neolithic house-types in temperate Europe. PPS 15 (1949) 77–86.

Childe (1958) *V. G. Childe:* The Prehistory of European Society. London 1958.

Cladders (1995) *M. Cladders:* Die Tonware der ältesten Bandkeramik. Unterschung zur zeitlichen und räumlichen Gliederung. PhD dissertation, University of Frankfurt/Main 1995.

Clark (1952) *J. G. D. Clark:* Prehistoric Europe. The economic basis. London 1952.

Clark (1965) *J. G. D. Clark:* Radiocarbon dating and the expansion of farming culture from the Near East over Europe. PPS 31 (1965) 57–73.

Collard – Shennan (2000) *M. Collard – St. Shennan:* Processes of cultural change in prehistory: a case study from the European neolithic. In: C. Renfrew – K. Boyle (eds): Archaeogenetics: DNA and the population prehistory of Europe. McDonald Institute monographs. Cambridge 2000: 89–97.

Comşa (1959) *E. Comşa:* La civilisation Criş sur le territoire de la Roumanie. AAC 1 (1939) 173–190.

Comşa (1966) *E. Comşa:* Materiale de tip Starčevo descoperite la Liubcova. SCIV 17 (1966) 355–361.

Comşa (1971) *E. Comşa* Données sur la civilisation de Dudeşti. PZ 46/2 (1971) 195–249.

Comşa (1972–73) *E. Comşa* Quelques problèmes concernant la civilisation de Ciumeşti. AAC 13 (1972–73) 39–50.

Comşa (1976–77) *E. Comşa:* Date privind procesul de neolitizare pe teritoriul României. Aluta (Sf. Gheorghe – Sepsiszentgyörgy) 1976–77: 19–24.

Comşa (1978) *E. Comşa:* Contribution à l'étude de la culture Criş en Moldavie (Le site de Glavaneşti Vechi). Dacia 22 (1978) 9–36.

Comşa (1995) *E. Comşa:* Une agglomération de type Starčevo dans l'Ouest de la Moldavie. ActaMN 32 (1995) 4–52.

Conkey – Tringham (1995) *M. W. Conkey – R. E. Tringham:* Archaeology and the Goddess: exploring the contours of feminist archaeology. In: A. Stuart – D. Stanton (eds): Feminisms in the Academy: Rethinking the disciplines. Ann Arbor 1995: 199–247.

Conkey – Williams (1991) *M. W. Conkey – S. Williams:* Original narratives: the political economy of gender in archaeology. In: M. di Leonardo (ed.): Gender at the Crossroads of Knowledge: Feminist anthropology in the Post-Modern Era. Berkeley 1991: 102–139.

Coudart (1991) *A. Coudart:* Social structure and relationships in prehistoric small-scale sedentary societies: the Bandkeramik groups in neolithic Europe. In: S. Gregg (ed.): Between Bands and States. Center for Archaeologic Investigations, Southern Illinois University at Carbondale Ill. Carbondale 1991: 395–420.

Coudart (1998) *A. Coudart:* Architecture et société néolithique. L'unité et la variance de la maison danubienne. DAF 67. Paris 1998.

Crişmaru (1977) *A. Crişmaru:* Dragueşeni. Contribuţii la monografie arheologica. Botoşani 1977.

Csallány (1966) *D. Csallány:* Die Lehren der Ausgrabungen von Szentes–Ilonapart. AASzeged 10 (1966) 49–56.

Cseke (1994) *F. Cseke:* Nagykanizsa és környékének természeti viszonyai. Városi monográfia I. [The ecology of Nagykanizsa and its environment]. Nagykanizsa 1994: 11–42.

Cserny (1987) *T. Cserny:* Results of recent investigations of Lake Balaton deposits. In: M. Pécsi – L. Kordos (eds): Holocene Environment in Hungary. Ottawa – Budapest 1987: 67–76.

Cserny 1992–93 (1999) *T. Cserny:* Environmental geological investigations of Lake Balaton (Hungary). MÁFIJ 1992–93(1999) 131–137.

Cserny – Nagy-Bodor (1999) *T. Cserny – E. Nagy-Bodor:* Geological-palynological research of wetlands at the foothills of Alps. In: I. Draxler – A. Lippert: Pollenanalytische Daten und eine archäologische Bestandaufnahme zur frühen Siedlungsgeschichte im Gebiet zwischen Raab und Mur (Österreich, Slowenien, Ungarn). In: Abhandlungen der geologischen Bundesanstalt 56/1 (1999) 337–396 (383–394).

Cserny – Nagy-Bodor (in press) *T. Cserny – E. Nagy-Bodor:* Geological-palynological research of wetlands at the foothills of Alps. In: E. Bánffy (ed.): Archaeology and Settlement History in the Kerka Valley, South-West Hungary. Antaeus 28.

Culiberg (1999) *M. Culiberg:* Palaeovegetational research in Prekmurje, Slovenia. In: I. Draxler – A. Lippert: Pollenanalytische Daten und eine archäologische Bestandaufnahme zur frühen Siedlungsgeschichte im Gebiet zwischen

Raab und Mur (Österreich, Slowenien, Ungarn). In: Abhandlungen der geologischen Bundesanstalt 56/1 (1999) 337–396 (373–377).

Cziezla (1992) *E. Cziezla:* Jäger und Sammler. Die mittlere Steinzeit im Landkreis Pirmasens. Brühl 1992.

Debreczy (1981) *Zs. Debreczy:* Növényvilág a Balaton körül [The flora around the Balaton]. In: I. Illés (ed.): Tavunk a Balaton [The Balaton: our lake]. Budapest 1981: 75–119.

Démoule (1993) *J.-P. Démoule:* Anatolie et Balkans: la logique évolutive du Néolithique Égéen. Anatolica 19 (1993) 1–17.

Démoule – Lichardus-Itten (1994) *J.-P. Démoule – M. Lichardus-Itten:* Kovačevo. Rapport préliminaire (Campagnes 1986–1993). BCH 118 (1994) 561–618.

Démoule – Perlès (1993) *J.-P. Démoule – C. Perlès:* The Greek Neolithic: a new review. JWP 7/4 (1993) 355–416.

Dennell (1978) *R. Dennell:* Early Farming in South Bulgaria from the VIth to the IIIrd Millenium BC. BAR IntSer 45. Oxford 1978.

Dennell (1983) *R. Dennell:* European Economic Prehistory: a new approach. London 1983.

Dennell (1992) *R. Dennell:* The origins of crop agriculture in Europe. In: C. W. Cowall – P. J. Watson (eds): The Origins of Agriculture: an international perspective. Washington 1992: 71–100.

Dergačev – Sherratt – Larina (1991) *V. Dergačev – A. Sherratt – O. Larina:* Recent results of neolithic research in Moldavia. OJA 10 (1991) 1–16.

Detev (1950) *P. Detev:* Selišnata mogila Banyata pri Kapitan Dimitrijevo (Le tell Banjata pres de Kapitan Dimitrijevo). Godišnik, Plovdiv 2 (1950) 1–23.

Detev (1959) *P. Detev:* Materiali za praistorijata na Plovdiv (Matériaux de la préhistoire de Plovdiv). GPM 3 (1959) 3–80.

Detev (1960) *P. Detev:* Razkopki na selishnata mogila Jašatepe v Plovdiv prez 1959 g. (Les fouilles du tell Jassatepe a Plovdiv en 1959) GPM 4 (1960) 1–59.

Detev (1968) *P. Detev:* Praistoričeskata selište pri selo Muldava. GPM 6 (1968) 9–48.

Dimitrijević (1969a) *St. Dimitrijević:* Das Neolithikum in Syrmien, Slawonien und N-W-Kroatien. AI 10 (1969) 39–76.

Dimitrijević (1969b) *St. Dimitrijević:* Starčevačka kultura u Slavonsko-Srijemskom prostoru i problem prijeleza ranog u srednji neolit u Srpskom, Hrvatskom Podunavlju. Vukovar 1969: 9–97.

Dimitrijević (1974) *St. Dimitrijević:* Das Problem der Gliederung der Starčevo-Kultur mit besonderer Rücksicht auf den Beitrag der südpannonischen Fundstellen zur Lösung dieses problems. Materijali 10. Beograd 1974: 93–107.

Dimitrijević (1979) *St. Dimitrijević:* Sjeverna zona. In: M. Garašanin (ed.): Praistorija jugoslavenskih zemalja II: Neolitsko doba. Sarajevo 1979: 229–360.

Dolukhanov (1973) *P. M. Dolukhanov:* The neolithisation of Europe: a chronological and ecological approach. In: C. Renfrew (ed.) The Explanation of Culture Change. Models in prehistory. London 1973: 329–342.

Domanska (1989) *L. Domanska:* Elements of food-producing economy in the late mesolithic of the Polish Lowland. In: C. Bonsall (ed.): The Mesolithic of Europe. Edinburgh 1989: 447–455.

Domboróczki (1997) *L. Domboróczki:* Füzesabony–Gubakút. Újkőkori falu a Kr. e. VI. évezredből = Neolithic village from the 6th Millennium B.C. In: *Raczky – Kovács – Anders (1997)* 19–25.

Domboróczki (1999) *L. Domboróczki:* Az újkőkor idősebb szakasza ÉK-Magyarországon, a Heves megyei régészeti leletek fényében (The older phase of the Neolithic in North-Eastern Hungary in the light of archaeological finds from Heves County). In: T. Petercsák – L. Domboróczki (eds): Early Farmers in Europe. A korai földművelők Európában. Valencia 1999: 15–47.

Domboróczki (2001a) *L. Domboróczki:* Településszerkezeti sajátosságok a középső neolitikum időszakából, Heves megye területéről (Characteristics of settlement patterns in the middle phase of the New Stone Age from the area of Heves County). In: Momos 1. Debrecen 2001: 67–94.

Domboróczki (2001b) *L. Domboróczki:* The excavation at Füzesabony–Gubakút. A preliminary report. In: R. Kertész – J. Makkay (eds): From the Mesolithic to the Neolithic. Proceedings of the International Archaeological Conference held in Szolnok 1996. Archaeolingua 11. Budapest 2001: 193–214.

Draşovean (1981) *F. Draşovean:* Cultura Starčevo-Criş in Bazinul Mureşului mijlociu. Apulum 19 (1981) 33–45.

Draveczky (1970) *B. Draveczky:* Somogy megye régészeti képeskönyve [An archaeological picture-book of County Somogy]. Kaposvár 1970.

Draxler (1999) *I. Draxler:* In: I. Draxler – A. Lippert: Pollenanalytische Daten und eine archäologische Bestandaufnahme zur frühen Siedlungsgeschichte im Gebiet zwischen Raab und Mur (Österreich, Slowenien, Ungarn). Abhandlungen der geologischen Bundesanstalt 56/1 (1999) 337–396.

Ecsedy (1976) *I. Ecsedy:* Two neolithic idols from Hungary. FolArch 27 (1976) 41–52.

Eggert – Veit (1998) *M. H. K. Eggert – U. Veit (eds):* Theorie in der Archäologie: zur englischsprachigen Diskussion. Münster 1998.

Egry (1997) *I. M. Egry:* Mosonszentmiklós–Egyéni földek. RégFüz 48 (1997) 19.

Ehrich (1977) *R. W. Ehrich:* Starčevo revisited. In: V. Markotić (ed.): Ancient Europa and the Mediterranean: studies presented in honour of H. Hencken. Warminster 1977: 59–67.

Elia (1982) *R. J. Elia:* A Study of the Neolithic Architecture of Thessaly, Greece. PhD, Boston University. Boston 1982.

Eliade (1969) *M. Eliade:* The Quest. History and meaning in religion. Chicago 1969.

Eliade (1976) *M. Eliade:* Patterns in Comparative Religion. London 1976.

Eliade (1978) *M. Eliade:* Geschichte der religiösen Ideen. Freiburg–Breisgau 1978.

Eliade (1982) *M. Eliade:* Schamanismus und archaische Extasetechnik. Frankfurt 1982.

Ellmers (1982) *D. Elmers:* Frühe Schiffahrt in West- und Nordeuropa. In: H. Müller-Karpe (ed.): Zur geschichtlichen Bedeutung der frühen Seefahrt. Neue Forschungen zur Altsteinzeit. Forschungen zur Allgemeinen und Vergleichenden Archäologie (AVA) Kolloquium. Bonn 1982: 163–190.

Endrődi (1994) *A. Endrődi:* Törökbálint–Dulácska. RégFüz 46 (1994) 28.

Eöry – Sági – Törőcsik (1991) *B. Eöry – K. Sági – Z. Törőcsik:* A Dunántúli Vonaldíszes Kerámia "Tapolcai csoportjának" legújabb lelőhelyei a Balaton környékéről (New sites of the "Tapolca group" of the Transdanubian Linear Pottery ware culture around the Balaton). TapolcaVMK 2 (1991) 7–30.

Erny-Rodman et al. (1997) *C. Erny-Rodman – E. Gross-Klee – J. N. Haas – S. Jacomet – H. Zoller:* Früher "human impact" und Ackerbau im Übergangsbereich Spätmesolithikum-Frühneolithikum im schweizerischen Mittelland. JSGU 80 (1997) 27–56.

Fedele (1999) *F. Fedele:* Economy and territory of high-altitude Mesolithic land use: the Central Alps. In: Ph. Della Casa (ed.): Prehistoric Alpine Environment, Society and Economy. UPA 55. Bonn 1999: 25–36.

Feng (2000) *Zhang Feng:* The Mesolithic in South China. DocPraehist 27 (2000) 225–231.

Fischer (1995) *A. Fischer (ed.):* Man and Sea. Proceedings of the International Symposium Kalendborg, Denmark 1993. Oxford 1995.

Flannery (1971) *K. V. Flannery:* Origins and ecological effects of early domestication in Iran and the Near East. In: St. Struever (ed.): Prehistoric Agriculture. New York 1971: 50–79.

Flannery (1973) *K. V. Flannery:* The origins of agriculture. Annual Review of Anthropology 1973: 271–310.

Frazer (1965) *J. G. Frazer:* Az aranyág (The Golden Bough). Budapest 1965.

Frirdich (1994) *Chr. Frirdich:* Kulturgeschichtliche Betrachtungen zur Bandkeramik im Merzbachtal. In: J. Lüning – P. Stehli (eds): Die Bandkeramik im Merzbachtal auf der Aldenhovener Platte. Rheinische Ausgrabungen 36. Bonn 1994: 207-393

Füzes (1989) *M. Füzes:* A földmívelés kezdeti szakaszának (neolitikum és rézkor) növényleletei Magyarországon. (Archeobotanikai vázlat) Die Pflanzenfunden in Ungarn der anfänglichen Entwicklungsphase des Ackerbaues (Neolithikum und Kupferzeit). Archäobotanische Skizze. TapolcaVMK 1 (1989) 139–238

Gábori (1968) *M. Gábori:* Mesolithischer Zeltgrundriss in Sződliget. ActaArchHung 20 (1968) 33–36.

Gábori (1981) *M. Gábori:* Az ősember korának kutatása Magyarországon (1969 – 1980) [The research of prehistoric man in Hungary]. MTAK(II) 30/1 (1981) 91–109.

Gaffrey (1994) *J. Gaffrey:* Die Steininventare der bandkeramischen Siedlungsplätze Laurenzberg 7, Langweiler 16 und Laurenzberg 8. In: J. Lüning – P. Stehli (eds): Die Bandkeramik im Merzbachtal auf der Aldenhovener Platte. Bonn 1994: 395–531.

Gallis – Orphanidis (1996) *K. Gallis – L. Orphanidis:* Figurines of Neolithic Thessaly I. Academy of Athens, Research Centre for Antiquity, Monograph 3. Athens 1996.

Gallus – Mithay (1942) *S. Gallus – S. Mithay:* Győr története [The history of Győr]. Győr 1942.

Galović (1962) *R. Galović:* Neolitsko naselje u Tečiču kod Rekovca (Station néolithique à Tečić pres Kragujevac). ZRNM 3 (1961) 31–46

Garašanin (1958) *M. Garašanin:* Neolithikum und Bronzezeit in Serbien und Makedonien. BRGK 39 (1958): 1–130

Garašanin (1979a) *M. Garašanin:* Starčevačka grupa. In: A. Benac (ed.): Praistorija Jugoslavenskog zemalja. Beograd 1979: 115–143.

Garašanin (1979b) *M. Garašanin:* Centralnobalkanska zona. In: A. Benac (ed.): Praistorija Jugoslavenskog zemalja. Beograd 1979: 79–212.

Garašanin (1980) *M. Garašanin:* Les origines du néolithique dans le bassin de la Méditerranée et dans le Sud-Est Europe. In: J. Kozłowski – J. Machnik (eds): Problèmes de la néolithisation dans certaines régions de l'Europe. Kraków 1980: 57–72.

Garašanin – Radovanović (2001) *M. Garašanin – I. Radovanović:* A pot in House 54 at Lepenski Vir. Antiquity 75 (2001) 118–125.

Garašanin – Spasovska (1976) *M. Garašanin – G. Spasovska:* Neue Grabung in Zelenikovo bei Skopje. MacAA 2 (1976) 85–118.

Garašanin (1960) *D. Garašanin:* Nosa–Biserna obala, praiskorijsko naselje. Starinar 11 (1960) 228–229.

Gatsov (1989) *I. Gatsov:* Early Holocene flint assemblages from the Bulgarian Black Sea coast. In: C. Bonsall (ed.): The Mesolithic of Europe. Edinburgh 1989: 471–474.

Gatsov (1995) *I. Gatsov:* Flint production from the ninth to the sixth Millennium BC. In: D. W. Bailey – I. Panayotov (eds): Prehistoric Bulgaria. Monographs in World Archaeology 22. Madison, Wis. 1995: 73–77.

Gatsov (1996) *I. Gatsov:* Epipaleolithic sites from NW Turkey. In: St. K. Kozłowski – H. G. K. Gebel (eds): Neolithic Chipped Stone Industries of the Fertile Crescent, and their contemporaries in adjacent regions. Berlin 1996: 171–174.

Gatsov – Özdoğan (1994) *I. Gatsov – M. Özdoğan:* Some epi-paleolithic sites from NW-Turkey: Agaçlı, Domali and Gümüsdere. Anatolica 20 (1994) 97–120.

Gazdapusztai (1957) *Gy. Gazdapusztai:* A Körös-kultúra lakótelepe Hódmezővásárhely–Gorzsán (The settlement of the Körös culture at Hódmezővásárhely–Gorzsa). ArchÉrt 84 (1957) 3–13.

Georgiev (1961) *G. I. Georgiev:* Kulturgruppen der Jungstein- und der Kupferzeit in der Ebene von Thrazien (Südbulgarien). In: J. Böhm – S. J. De Laet (eds): Europe à la fin de l'âge de pierre. Praha 1961: 45–100.

Gimbutas (1976) *M. Gimbutas:* Neolithic Macedonia. Los Angeles 1976.

Gimbutas (1982) *M. Gimbutas:* The Goddesses and Gods of Old Europe. Myths and cult images. London 1982.

Gimbutas (1989a) *M. Gimbutas:* The Language of the Goddess. London 1989.

Gimbutas (1989b) *M. Gimbutas:* Chronology. In: M. Gimbutas – Sh. Winn – D. Shimabuku: Achilleion. A neolithic settlement in Thessaly, Greece, 6400–5600 BC. Los Angeles 1989: 23–31.

Gimbutas (1991) *M. Gimbutas:* The Civilization of the Goddess: the world of Old Europe. San Francisco 1991.

Gimbutas (1994) *M. Gimbutas:* Das Ende Alteuropas. Der Einfall von Steppennomaden aus Südrußland und die Indogermanisierung Mitteleuropas. Archaeolingua SerMin 6. Budapest 1994.

Gläser (1991) *R. Gläser:* Bemerkungen zur absoluten Datierung des Beginns der westlichen Linienbandkeramik. Banatica 11 (1991) 53–64.

Gläser (1994) *R. Gläser:* Die Linearbandkeramik in Transdanubien. Beiträge zu ihrer Chronologie und Entstehung. PhD dissertation, University of Heidelberg 1994.

Gläser (1996) *R. Gläser:* Zur absoluten Datierung der Vinča-Kultur anhand 14C-Daten. In: F. Draşovean (ed.): The Vinča Culture, its Role and Cultural Connections. Timişoara 1996: 175–212.

Gläser – Regenye (1989) *R. Gläser – J. Regenye:* A vonaldíszes kerámia és a Lengyeli-kultúra telepe Kúpon (Siedlung der Linienbandkeramik und der Lengyel-Kultur in Kúp). Veszprémi Történelmi Tár 2 (1989) 18–33.

Görsdorf – Boyadziev (1998) *J. Görsdorf – Y. Boyadziev:* Zur absoluten Chronologie der bulgarischen Urgeschichte. Berliner 14C-Datierungen von bulgarischen archäologischen Fundplätzen. Eurasia Antiqua 2 (1998) 105–173.

Grbić (1960) *M. Grbić:* Porodin, kasnoneolitsko naselje kod Bitolja. Bitolj 1960.

Grebska-Kulowa (1998) *M. Grebska-Kulowa:* Le néolithique ancien dans la moyen vallée de Struma (Strymon), Bulgarie Sud-Occidentale. In: M. Otte (ed.): Préhistoire d'Anatolie. Genèse de deux mondes I. ERAUL 85. Liège 1998: 143–158.

Greenfield – Draşovean (1994) *H. Greenfield – F. Draşovean:* An early Starčevo-Criş settlement in the Romanian Banat: preliminary report on the 1992 excavations at Foeni–Sălaş. AnB 3 (1994) 45–85.

Gronenborn (1990) *D. Gronenborn:* Mesolithic-neolithic interactions – the lithic industry of the earliest Bandkeramik Culture site at Friedberg–Bruchenbrücken, Wetteraukreis (West Germany). In: P. M. Vermeersch – Ph. v. Peer (eds): Contributions to the Mesolithic of Europe. Leuven 1990: 173–182.

Gronenborn (1994) *D. Gronenborn:* Überlegungen zur Ausbreitung der bäuerlichen Wirtschaft in Mitteleuropa – Versuch einer kulturhistorischen Interpretation ältestbandkeramischer Silexinventare. PZ 69 (1994) 135–151.

Gronenborn (1997) *D. Gronenborn:* Silexartefakte der ältestbandkeramischen Kultur. UPA 37. Bonn 1997.

Gronenborn (1998) *D. Gronenborn:* Ältestbandkeramische Kultur, La Hoguette, Limburg, and ...what else? Contemplating the mesolithic-neolithic transition in southern Central Europe. DocPraehist (Poročilo) 25 (1998) 189–202.

Gronenborn (1999) *D. Gronenborn:* A variation on a basic theme: The transition to farming in Southern Central Europe. JWP 13/2 (1999) 123–210.

Gyuricza (1999) *L. Gyuricza:* Nyugat-Zala tájhasznosításának alakulása a kilencvenes években [Recent landscape and land-use in the Western Zala County]. In: Gy. Füleky (ed.): A táj változásai a Kárpát-medencében [The change of landscape in the Carpathian Basin]. Gödöllő 1999: 63–68.

Hachem (2000) *L. Hachem:* New observations on the Bandkeramik house and social organisation. Antiquity 74 (2000) 308–312.

Halstead (1984) *P. L. J. Halstead:* Strategies for Survival: an ecological approach to social and economic change in the early farming communities of Thessaly, N. Greece. PhD dissertation, University of Cambridge 1984.

Halstead (1989) *P. L. J. Halstead:* Like rising damp? An ecological approach to the spring of farming in South East and Central Europe. In: A. Milles – D. Williams – N. Gardner (eds): The Beginnings of Agriculture. BAR IntSer 496 Oxford 1989 Chapter 2.

Halstead (1996) *P. L. J. Halstead:* The development of agriculture and pastoralism in Greece: when, how, who and what? In: D. H. Harris (ed.): The Origins and Spread of Agriculture and Pastoralism in Eurasia. London 1996 296–309.

Halstead (1999) *P. Halstead (ed.):* Neolithic Society in Greece. Sheffield studies in Aegean Archaeology 2. Sheffield 1999.

Hampel (1992) *A. Hampel:* Frankfurt/Main–Niedereschbach. Ein ältest-bandkeramischer Siedlungsplatz. I. Die Befunde. Bonn 1992.

Hansen (2001) *S. Hansen:* Neolithic sculpture. Some remarks on an old problem. Symbols of the other world. In: F. Bertemes – P. F. Biehl (eds): The Archaeology of Cult and Religion. Archaeolingua 13. Budapest 2001: 37–52.

Harkay (1996) *M. Harkay:* A Kis-Balaton–rekonstrukció és környezeti hatásai (The Little-Balaton reconstruction and its impact on the environment). In: L. Költő – L. Vándor (eds): Évezredek üzenete a láp világából (Régészeti kutatások

a Kis-Balaton területén 1979–1992) [Message from the moorland. Archaeological investigations in the Little Balaton region]. Kaposvár–Zalaegerszeg 1996: 7–13.

Harlan (1995) *J. R. Harlan:* The Living Fields: our agricultural heritage. Cambridge 1995.

Harrer – Lenneis (2001) *A. Harrer – E. Lenneis:* Die ersten Nachweise der Älteren Linienbandkeramik und andere wichtige Neufunde des Frühneolithikums aus dem Raum Melk, Niederösterreich. ArchÖsterreichs 12/1 (2001) 31–38.

Harris (1977) *D. Harris:* Alternative pathways towards agriculture. In: C. A. Reed (ed.): Origins of Agriculture. The Hague 1977: 179–243.

Hartz – Lübke (1999) *S. Hartz – H. Lübke:* Paddelfunde aus der Mittel- und Jungsteinzeit Schleswig-Holsteins. In: E. Cziesla – Th. Kersting – St. Pratsch (eds): Den Bogen spannen... Festschrift für Bernhard Gramsch zum 65. Geburtstag. Beiträge zur Ur- und Frühgeschichte Mitteleuropas 20. Weissbach 1999: 99–106.

Hauptmann (1967) *H. Hauptmann:* Zum Neolithikum in Makedonien. IstMitt 17 (1967) 1–21.

Hauptmann (1993) *H. Hauptmann:* Ein Kultgebäude in Nevali Çori. In: M. Frangipane – H. Hauptmann – M. Liverani – P. Matthiae – M. Mellink (eds): Between the Rivers and over the Mountains. Archaeologica Anatolica et Mesopotamica Alba Palmieri dedicata. Roma 1993: 37–69.

Hauptman (1999) *H. Hauptmann:* The Urfa region. In: M. Özdoğan – N. Başgelen (eds): Neolithic in Turkey. The cradle of civilization. New discoveries. Istanbul 1999: 65–86.

Hauptmann – Milojčić (1969) *H. Hauptmann – V. Milojčić:* Die Funde der frühen Dimini-Zeit aus der Arapi-Magula, Thessalien. BAM 9. Bonn 1969.

Häusler (1998) *A. Häusler:* Struktur und Evolution der Bestattungssitten zwischen Wolga und Karpatenbecken vom Äneolithikum bis zur frühen Bronzezeit. Ein diachroner Vergleich. In: B. Hänsel – J. Machnik: Das Karpatenbecken und die osteuropäische Steppe: Nomadenbewegungen und Kulturaustausch in den vorchristlichen Metallzeiten (4000–500 v. Chr.) München 1998: 136–161.

Hayden (2001) *B. Hayden:* Richman, poorman, beggarman, chief: the dynamics of social inequality. In: G. M. Feinman – T. D. Price (eds): Archaeology at the Millennium. A sourcebook. New York: 231–272.

Hegedűs (1982–83) *K. Hegedűs:* The settlement of the neolithic Szakálhát group at Csanytelek–Újhalastó. MFMÉ 1982–83/1 7–54.

Heinen (1991) *M. Heinen:* Frühmesolithische Siedlungsstellen in den Sanddünen von Sarching/Regensburg. AJB 1990. Stuttgart 1991: 28–29.

Hertelendi et al. (1995) *E. Hertelendi – N. Kalicz – P. Raczky – F. Horváth – M. Veres – É. Svingor – I. Futó – L. Bartosiewicz:* Re-evaluation of the neolithic in eastern Hungary based on calibrated radiocarbon dates. Radiocarbon 37/2 (1995) 239–244.

Hillemeyer (1989) *E. Hillemeyer:* Die linearkeramische Siedlung von Wang. AJB 1988 (1989) 25–26.

Hiller (2001) *St. Hiller:* Pfosten als Wandvorlagen in der vorgeschichtlichen Hausarchitektur. In: F. Draşovean (ed.): Festschrift für Gheorghe Lazarovici. Timişoara 2001: 245–266.

Hiller – Georgiev (1984) *St. Hiller – G. I. Georgiev:* Tell Karanovo 1984. Vorläufiger Ausgrabungsbericht. Schriftenreihe des Instituts für Alte Geschichte und Altertumskunde der Universität Salzburg. Reihe I:1. Salzburg 1984.

Hiller – Nikolov (1997) *St. Hiller – V. Nikolov (eds):* Karanovo. Die Ausgrabungen im Südsektor 1984–1992. Salzburg–Sofia 1997.

Hiptmair (1997) *P. Hiptmair:* Neolithische Statuetten und figürliche Darstellungen. In: *Hiller – Nikolov (1997)* Kapitel 13: 255–270.

Hodder (1982) *I. Hodder:* Symbols in Action. Cambridge 1982.

Hodder (1990) *I. Hodder:* The Domestication of Europe. Structure and contingency in neolithic societies. Oxford 1990.

Hodder (1996) *I. Hodder (ed.):* On the Surface: Çatalhöyük 1993–1995. McDonald Institute monographs 22. Exeter 1996.

Hodder (1999) *I. Hodder:* Renewed work at Çatalhöyük. In: M. Özdoğan – N. Başgelen (eds): Neolithic in Turkey. Istanbul 1999: 157–164.

Holtorf (1993) *C. Holtorf,:* TAG 1992: ein kurzer Einblick. Raubgräber N. F. 3 (1993) 3–4.

Horváth (1988) *F. Horváth:* A Tisza-vidék újkőkori településrendszerének és háztípusainak áttekintése (Übersicht über das Siedlungssystem und die Haustypen der Theiss-Gegend im Neolithikum). MFMÉ 1988/1: 15–40.

Horváth (1989a) *F. Horváth:* A Tisza-vidék újkőkori településrendszerének és háztípusainak áttekintése (Übersicht über das Siedlungssystem und die Haustypen der Theißgegend im Neolithikum). ArchÉrt 116 (1989) 15–40.

Horváth (1989b) *F. Horváth:* A survey on the development of neolithic settlement pattern and house types in the Tisza region. In: S. Bökönyi (ed.): Neolithic of Southestern Europe and its Near Eastern Connections. VAH 2. Budapest 1989: 85–101.

Horváth (1994) *F. Horváth:* Az Alföldi Vonaldíszes kultúra első önálló települése a Tisza-Maros szögében: Hódmezővásárhely–Térefok (Linear Pottery culture in the Tisza-Maros region: Hódmezővásárhely–Térefok). In: G. Lőrinczy (ed.): A kőkortól a középkorig – Von der Steinzeit bis zum Mittelalter. Studien zum 60. Geburtstag von Ottó Trogmayer. Szeged 1994: 95–124.

Horváth – Hertelendi (1994) *F. Horváth – E. Hertelendi:* Contribution to the 14C based absolute chronology of the Early and Middle Tisza region. JAMÉ 36 (1994) 121–133.

Horváth (1983) *L. A. Horváth:* Die neolithische Siedlung von Szentes–Ilonapart. DissArch Ser. 2:12. Budapest 1983.

Horváth (2002a) *L. A. Horváth:* Neolitikus leletek Dunakeszi határában (Neolithische Funde in der Gemarkung von Dunakeszi). BudRég 35 (2002) 7–34.

Horváth (2002b) *L. A. Horváth:* Neolithische Funde und Befunde in der Gemarkung von Dunakeszi. ActaArchHung 53 (2002) 1–40.

Horváth (2002c) *L. A. Horváth:* Neolithikum. In: P. Zsidi – A. Endrődi (eds): Az építménytől az épületig – ásatástól a rekostrukcióig (From Hut to Building – from excavation to reconstruction.) Temporary exhibition in the BHM Aquincum Museum. Budapest 2002.

Horváth – H. Simon (1997) *L. A. Horváth – K. H. Simon:* A neolithikum és a rézkor Zalaegerszeg környékén [The Neolithic and the Copper Age at Zalaegerszeg 3. In: Zalaegerszeg évszázadai. Várostörténeti tanulmányok [The centuries of Zalaegerszeg. Studies on urban history]. Zalaegerszeg 1997: 7–48.

Horváth – H. Simon (2003) *K. H. Simon – L. A. Horváth:* Das Neolithikum und die Kupferzeit in Südwesttransdanubien (Siedlungsgeschichte und Forschungsstand). IPH. Budapest.

Höckmann (1965) *O. Höckmann:* Menschliche Darstellungen in der bandkeramischen Kultur. JRGZM 12 (1965) 1–34.

Höckmann (1972) *O. Höckmann:* Andeutungen zur Religion und Kultus in der bandkeramischen Kultur. Alba Regia 18 (1972) 187–209.

Höckmann (1985a) *O. Höckmann:* Ein ungewöhnlicher neolithischer Statuettenkopf aus Rockenberg, Wetteraukreis. JRGZM 32 (1985) 92–110.

Höckmann (1985b) *O. Höckmann:* Antike Seefahrt. München 1985.

Höckmann (1995) *O. Höckmann:* Ein ungewöhnlicher linearbandkeramischer Kultgegenstand aus Weimar–Ehringsdorf. Alt-Thüringen 29 (1995) 7–18.

Höckmann (1996) *O. Höckmann:* Schiffahrt in der Steinzeit. In: M. Porumb (ed.): Omaggio a Dinu Adamesteanu. Accademia Romana. Istituto di Archeologia e Storia dell'Arte. Associazione per le relazioni Culturali fra Italia Emilia Romagna. Cluj–Napoca 1996: 25–60.

Höckmann (2001) *O. Höckmann:* Bandkeramische Menschenbilder: Göttinnen – oder?? MAGW 130/131 (2000/2001) 77–92.

H. Simon (1994) *K. H. Simon:* Frühneolithische Kultgegenstände bei Gellénháza, Kom. Zala. In: G. Lőrinczy (ed.): A kőkortól a középkorig – Von der Steinzeit bis zum Mittelalter. Studien zum 60. Geburtstag von Ottó Trogmayer. Szeged 1994: 53–65.

H. Simon (1996) *K. H. Simon:* Ein neuer Fundort der Starčevo-Kultur bei Gellénháza (Kom. Zala, Ungarn) und seine südliche Beziehungen. In: F. Draşovean (ed.): The Vinča Culture, its Role and Cultural Connections. Timişoara 1996: 59–92.

H. Simon (2002) *K. H. Simon:* Das Fundmaterial der frühesten Phase der Transdanubischen Linienbandkeramik auf dem Fundort Zalaegerszeg–Andráshida, Gébártitó, Arbeitsplatz III. In: E. Bánffy (ed.): Prehistoric Studies. In memoriam I. Bognár-Kutzián. Antaeus 25 (2002) 189–203.

Ignat (1979) *D. Ignat:* Aşezarea neolitica apartinînd culturii Starčevo-Criş de la Fughiu (jud. Bihor) (Le habitat néolithique appartenant à la culture Starčevo-Criş de Fughiu). Crisia 9 (1979) 721–733.

Ignat (1983) *D. Ignat:* Tipuri de locuinţe in aşezarile apartinînd culturii Starčevo-Criş din Nord-Vestul Romaniei (Types d'habitations dans les sites appartenant de la civilisation Starčevo-Criş du nord-ouest de la Roumanie). Crisia 13 (1983) 9–16.

Ignat (1987) *D. Ignat:* Ceramique peinte du nord-ouest de la Roumanie. In: La civilisation de Cucuteni en contexte Européen. Bibl. Arch. Iassiensis I. Iaşi 1987: 43–47.

Ignat (1998) *D. F. Ignat:* Grupul cultural neolitic Suplacu de Barcău (Suplacu de Barcău. The neolithic cultural group). Timişoara 1998.

Ignat (2001) *D. F. Ignat:* The early neolithic in North-West of Romania. In: F. Draşovean (ed.): Festschrift für Gheorghe Lazarovici. Timişoara 2001: 69–89.

Jablonka (2002) *P. Jablonka:* Die Verbindung zwischen dem Schwarzen Meer und dem Mittelmeer seit dem Ende der letzten Eiszeit: Archäologie und Geologie. In: G. Wagner – E. Pernicka – H. P. Uerpman (eds): Troia and the Troad – scientific approaches. Heidelberg 2002: 77-84

Jackes et al. (1997) *M. Jackes – D. Lubell – Chr. Meiklejohn:* Healthy and mortal: human biology and the first farmers of Western Europe. Antiquity 71 (1997) 639–658.

Járai-Komlódi (1987) *M. Járai-Komlódi:* Post-glacial climate and vegetation history in Hungary. In: M. Pécsi – L. Kordos (eds): Holocene Environment in Hungary. Ottawa–Budapest 1987: 37–47.

Jarman (1996) *M. Jarman:* Human influence in the development of the Cretan fauna. In: D. Reese (ed.): The Pleistocene and Holocene Fauna of Crete and its First Settlers. Madison, Wis. 1996: 211–230.

Jaskó (1947) *S. Jaskó:* Lepusztulás és üledékfelhalmozódás Magyarországon a kainozoikumban [Erosion and sediment composition in Hungary during the cainozoic period]. FtK 1947: 23–26.

Jeunesse (1987) *Chr. Jeunesse:* La céramique de La Hoguette. Un nouvel "élement non-rubané" du Néolithique Ancien de l'Europe du Nord-Ouest. Cahiers Alsaciens 30 1987: 5–33.

Jochim (1990) *M. A. Jochim:* The late Mesolithic in Southwest Germany: culture change or population decline? In: P. M. Vermeersch – Ph. v. Peer (eds): Contributions to the Mesolithic of Europe. Leuven 1990: 183–191.

Jochim (1998) *M. A. Jochim:* A Hunter-Gatherer Landscape. Southwest Germany in the late Palaeolithic and Mesolithic. New York – London 1998.

Jochim (2002) *M. A. Jochim:* The mesolithic. In: S. Milisauskas (ed.): European Prehistory. A survey. New York–Boston–London–Moscow 2002: 115–142.

Jochim et al. (1998) *M. Jochim – M. Glass – L. Fischer – P. McCarthy:* Mapping the Stone Age: an interim report on the South German Survey project. In: N. J. Conard – H. J. Kind (eds): Aktuelle Forschungen zum Mesolithikum. Urgeschichtliche Materialhefte 12. Tübingen 1998: 121–131.

Jones (2001) *M. Jones:* The Molecule Hunt. How archaeologists are bringing the past back to life. London 2001.

Jovanović (1968) *B. Jovanović:* La signification de certaines élémentes de culte de groupe de Starčevo. Starinar 18 (1968) 11–20.

Jovanović (1969) *B. Jovanović:* Chronological frames of the Iron gates group of the Early Neolithic period. AI 10 (1969) 23–38.

Jovanović (1972) *B. Jovanović:* The autochthonous and the migrational components of the Early Neolithic of the Iron Gates. Balcanica 3 (1972) 49–58.

Jovanović (1987) *B. Jovanović:* Die Architektur und Keramik der Siedlung Padina B am Eisernen Tor, Jugoslawien. Germania 65/1 (1987) 1–16.

Jovanović (2001) *B. Jovanović:* Padina and Hajdučka Vodenica: sites of the Lepenski Vir culture in the Upper and Lower Gorges of the Iron Gates. In: M. Otte (ed.): UISPP Conference Handbook, Liège, Sept 2001. Séction mésolithique. Liège 2001: 186.

Juhász (2002) *I. Juhász:* The palynographic reconstruction of the Late Glacial and the Holocene periods of County Zala, South West Hungary (Reconstruction palynographique de Tardiglaciaire et de l'Holocene de la région de Zala, Sudouest de la Hongrie) PhD dissertation, Universities of Marseille–Pécs 2002.

"Jungsteinzeit in Bulgarien" "Jungsteinzeit in Bulgarien". Bauern und Handwerker. Braunschweigisches Landesmuseum, Wunstorf – Sofia 1981. Sofia 1992.

Kaczanowska (1990) *M. Kaczanowska:* Die Feuersteinindustrie der Kultur mit Linienbandkeramik von Eilsleben, Kr. Wanzleben. JMV 73 (1990) 29–40.

Kaczanowska (2001) *M. Kaczanowska:* Feuersteinindustrie des westlichen und östlichen Kreises der Linearbandkeramikkultur – ein Vergleichsversuch. In: R. Kertész – J. Makkay (eds): From the Mesolithic to the Neolithic. Proceedings of the International Archaeological Conference held in Szolnok 1996. Archaeolingua 11. Budapest 2001: 215–223.

Kaiser – Voytek (1982) *T. Kaiser – B. Voytek:* Sedentary and economic change in the Balkan Neolithic. JAA 2 (1982) 323–353.

Kalicz (1970) *N. Kalicz:* Agyagistenek (Clay Gods). Hereditas. Budapest 1970.

Kalicz (1978–79) *N. Kalicz:* Funde der ältesten Phase der Linienbandkeramik in Südtransdanubien. MittArchInst 8/9 (1978–79) 13–46.

Kalicz (1980) *N. Kalicz:* Neuere Forschungen über die Entstehung des Neolithikum in Ungarn. In: J. Kozłowski – J. Machnik (eds): Problèmes de la néolithisation dans certaines régions de l'Europe. Kraków 1980: 97–102.

Kalicz (1983) *N. Kalicz:* Die Körös-Starčevo-Kulturen und ihre Beziehungen zur Linearbandkeramik. NNU 52 (1983) 91–130.

Kalicz (1985) *N. Kalicz:* Kőkori falu Aszódon (Neolithisches Dorf in Aszód). Aszód 1985.

Kalicz (1988) *N. Kalicz:* A termelő gazdálkodás kezdetei a Dunántúlon – Neolitikum. Akadémiai doktori disszertáció, kézirat. The Beginnings of the Food Productive Economy in Transdanubia. Dr.Sc. Diss., manuscript. Budapest 1988.

Kalicz (1990) *N. Kalicz:* Frühneolithische Siedlungsfunde aus Südwestungarn. IPH 4. Budapest 1990.

Kalicz (1991) *N. Kalicz:* Die Keszthely-Gruppe der Transdanubischen (mitteleuropäischen) Linienbandkeramik im Lichte der Ausgrabung in Kustánszeg (Westungarn). CommArchHung 1991: 5–32.

Kalicz (1993) *N. Kalicz:* The early phases of the neolithic in Western Hungary (Transdanubia). Poročilo 21 (1993) 85–135.

Kalicz (1994a) *N. Kalicz:* A Dunántúli (közép-európai) vonaldíszes kerámia legidősebb leletei és a korai Vinča-kultúra (Die ältesten Funde der transdanubischen / mitteleuropäischen/ Linienbandkeramik und die frühe Vinča-Kultur). In: G. Lőrinczy (ed.): A kőkortól a középkorig – Von der Steinzeit bis zum Mitterlalter. Studien zum 60. Geburtstag von Ottó Trogmayer. Szeged 1994: 67–84.

Kalicz (1994b) *N. Kalicz:* Wenden des Spätneolithikums im Oberen Theißgebiet. JAMÉ 36 (1994) 263–290.

Kalicz (1995) *N. Kalicz:* Die Älteste transdanubische (mitteleuropäische) Linienbandkeramik. Aspekte zur Ursprung, Chronologie und Beziehungen. ActaArch Hung 47 (1995) 23–59.

Kalicz (2000) *N. Kalicz:* Unterscheidungsmerkmale zwischen der Körös- und der Starčevo-Kultur in Ungarn. In: St. Hiller– V. Nikolov (eds.): Karanovo III: Beiträge zum Neolithikum in Südosteuropa. Wien 2000: 295–309.

Kalicz – Kalicz-Schreiber (1983–84) *N. Kalicz – R. Kalicz-Schreiber:* Aszód. Siedlungswesen und Wirtschaft einer Siedlung aus der Frühphase der Lengyel-Kultur in Nordost-Ungarn. MUAG 23–24 (1983–84) 309–325.

Kalicz – Koós (1997a) *N. Kalicz – J. Koós:* Mezőkövesd–Mocsolyás. Újkőkori telep és temetkezések a Kr. e. VI. évezredből = Neolithic settlement and graves from the 6th Millennium B.C. In: *Raczky – Kovács – Anders (1997)* 28–33.

Kalicz – Koós (1997b) *N. Kalicz – J. Koós:* Eine Siedlung mit ältestneolithischen Hausresten und Gräbern in Nordostungarn. In: M. Lazić (ed.): Antidóron. Completis LXV annis Dragoslavo Srejović ab amicis collegis discipulis oblatum. Centre for Archaeologcal Research/University of Belgrade, Faculty of Philosophy 17. Belgrade 1997: 125–135.

Kalicz – S. Koós (2000) *N. Kalicz – J. S. Koós:* Település a legkorábbi újkőkori sírokkal Északkelet-Magyarországról (Eine Siedlung mit ältestneolithischen Gräbern in Nordostungarn). HOMÉ 39 (2000) 45–76.

Kalicz – Makkay (1972a) *N. Kalicz – J. Makkay:* Südliche Einflüsse im frühen und mittleren Neolithikum Transdanubiens. Alba Regia 12 (1972) 93–105.

Kalicz – Makkay (1972b) *N. Kalicz – J. Makkay:* Probleme des frühen Neolithikums der nördlichen Tiefebene. Alba Regia 12 (1972) 77–92.

Kalicz – Makkay (1975) *N. Kalicz – J. Makkay:* A dél-dunántúli neolitikum kutatásának fontosabb kérdései [Important questions of the neolithic research in Southern Transdanubia]. SMK 2 (1975) 253–258.

Kalicz – Makkay (1976) *N. Kalicz – J. Makkay:* Frühneolithische Siedlung in Méhtelek–Nádas. MittArchInst 6 (1976) 13–24.

Kalicz – Makkay (1977) *N. Kalicz – J. Makkay:* Die Linienbandkeramik in der Großen Ungarischen Tiefebene. StudArch 7. Budapest 1977.

Kalicz – M. Virág – T. Biró (1998) *N. Kalicz – Zs. M. Virág – K. T. Biró:* The northern periphery of the early neolithic Starčevo culture in south-western Hungary: a case study of an excavation at Lake Balaton. DocPraehist (Poročilo…) 25 (1998) 151–187.

Kalicz – Raczky (1980–81) *N. Kalicz – P. Raczky:* Siedlung der Körös-Kultur in Szolnok–Szanda. MittArchInst 10–11 (1980–81) 13–24.

Kalicz – Raczky (1981) *N. Kalicz – P. Raczky:* The precursors to the "horns of consecration" in the Southeast European Neolithic. ActaArchHung 33 (1981) 5–20.

Kalicz – T. Biró – M. Virág (2002) *N. Kalicz – K. T. Biró – Zs. M. Virág:* Vörs, Máriaasszonysziget. In: Z. Bencze et al. (eds): Régészeti kutatások Magyarországon 1999 (Archaeological investigations in Hungary 1999). Budapest 2002: 15–26.

Kalicz-Schreiber – Kalicz (1992) *R. Kalicz-Schreiber – N. Kalicz:* Die erste frühneolithische Fundstelle in Budapest. In: M. Garašanin – D. Srejović (eds): Hommage à Nikola Tasić. Balcanica 23. Belgrade 1992: 47–76.

Kalmár-Maxim (1991) *Z. Kalmár-Maxim:* Catalogul expoziţiei. In: Gh. Lazarovici – F. Draşovean (eds): Cultura Vinča în România. Timişoara 1991: 141–231.
see also: Maxim

Kănčev (1973) *M. Kănčev:* Praistoričeski i antični materiali v muzeja na grad Nova Zagora. Nova Zagora 1973.

Karmanski (1968) *S. Karmanski:* Žrtvenici, statuete i amuleti sa lokaliteta Donja Branjevina kod Deronja. Odžaci 1968.

Karmanski (1977) *S. Karmanski:* Katalog antropomorfne i zoomorfne plastike iz okolina Odžaka. Odžaci 1977.

Karmanski (1979) *S. Karmanski:* Donja Branjevina. Odžaci 1979.

Karmanski (1988) *S. Karmanski:* Donja Branjevina. In: D. Srejović (ed.): The Neolithic of Serbia. Belgrade 1988: 75–76.

Karmanski (1990) *S. Karmanski:* Donja Branjevina. Beiträge. Odžaci 1990.

Kárpáti (1960) *Z. Kárpáti:* Die pflanzengeographische Gliederung Transdanubiens. Acta Botanica Acad. Sc. Hung. 6/1–2 (1960) 45–53.

Kaufmann (1961) *D. Kaufmann:* Figürliches aus der Bandkeramik des Altenburger Landes. AuF 6/2 (1961) 55–57.

Kaufmann (1976) *D. Kaufmann:* Linienbandkeramische Kultgegenstände aus dem Elbe-Saale-Gebiet. JMV 60 (1976) 61–96.

Kaufmann (1982) *D. Kaufmann:* Zu eigenen Ergebnissen der Ausgrabungen im Bereich des linienbandkeramischen Erdwerks bei Eilsleben, Kreis Wanzleben. In: J. Pavúk (ed.): Siedlungen der Kultur mit Linearbandkeramik in Europa. Nové Vozokaný 1981. Nitra 1982: 69–91.

Kaufmann (1983) *D. Kaufmann:* Die ältestlinienbandkeramischen Funde von Eilsleben, Kr. Wanzleben und der Beginn des Neolithikums im Mittelelbe-Saale-Gebiet. NNU 52 (1983) 177–202.

Kaufmann (1986) *D. Kaufmann:* Ausgrabungen im linienbandkeramischen Erdwerk von Eilsleben, Kr. Wanzleben 1980–1984. 5. Vorbericht. ZfA 20 (1986) 237–251.

Kaufmann (1987) *D. Kaufmann:* Die Linien- und Stichbandkeramik im Elbe-Saale-Gebiet. In: T. Wiślański (red.): Neolit i początki epohi brązu na ziemi Chełminskiej (The Neolithic and Early Bronze Age in the Chełmno Land). Toruñ 1987: 275–297.

Kaufmann (1991) *D. Kaufmann:* Südöstliche Einflüsse in der Linienbandkeramik des Elbe-Saale-Gebietes. Banatica 11 (1991) 275–295.

Kaufmann (1995) *D. Kaufmann:* Opferpraktiken im Neolithikum. Pravek NŘ 5: 95–108.

Kaufmann (1999) *D. Kaufmann:* Einige Bemerkungen zu linienbandkeramischen Tierdarstellungen. In: E. Cziesla – Th. Kersting – St. Pratsch (eds): Den Bogen spannent... Festschrift für Bernhard Gramsch zum 65. Geburtstag. Beiträge zur Ur- und Frühgeschichte Mitteleuropas 20. Weissbach 1999: 333–345.

Kertész (1994) *R. Kertész:* Late Mesolithic chipped stone industry from the site Jásztelek I (Hungary). In: Lőrinczy G. (ed.): A kőkortól a középkorig = Von der Steinzeit bis zum Mitterlalter. Studien zum 60. Geburtstag von Ottó Trogmayer. Szeged 1994: 23–44.

Kertész (1996) *R. Kertész:* The Mesolithic in the Great Hungarian Plain: A survey of the evidence. In: At the Fringes of Three Worlds. Hunter-gatherers in the Middle Tisza valley. Szolnok 1996: 5–39.

Kertész et al. (1994) *R. Kertész – P. Sümegi – M. Kozák – M. Braun – E. Félegyházi:* Mesolithikum im nördlichen Teil der ungarischen Tiefebene. JAMÉ 36 (1994) 15–61.

Kertész – Sümegi (1999) *R. Kertész – P. Sümegi:* Teóriák, kritika és egy modell: miért állt meg a Körös-Starčevo kultúra terjedése a Kárpát-medence centrumában? (Theories, critiques and a model: why did the expansion of the Körös-Starčevo culture stop in the centre of the Carpathian Basin?). Tisicum 11 (1999) 9–23.

Kertész – Sümegi (2001) *R. Kertész – P. Sümegi:* Theories, critique and a model: Why did the expansion of the Körös-Starčevo-culture stop in the centre of the Carpathian Basin? In: R. Kertész – J. Makkay (eds): From the Mesolithic to the Neolithic. Proceedings of the International Archaeological Conference held in Szolnok 1996. Archaeolingua 11. Budapest 2001: 225–246.

Kind (1992) *C.-J. Kind*: Der Freilandfundplatz Henauhof Nord II am Federsee und die "Buchauer Gruppe" des Endmesolithikums. AKorr 22 (1992) 341–353.

Kind (1997) *C.-J. Kind:* Die letzten Wildbeuter. Henauhof II und das Endmesolithikum in Baden-Württemberg. Materialhefte zur Urgeschichte in Baden-Württemberg 39. Stuttgart 1997.

Kind (1998) *C.-J. Kind:* Komplexe Wildbeutern und frühe Ackerbauern. Bemerkungen zur Ausbreitung der Linearbandkeramik in südlichen Mitteleuropa. Germania 76 (1998) 1–24.

Kind (2001) *C.-J. Kind:* The mesolithic open air sites of Siebenlinden, Southwest Germany. M. Otte (ed.): UISPP Conference handbook, Liège, Sept. 2001. Séction mésolithique. Liège 2001: 192.

Kneipp (1998) *J. Kneipp:* Bandkeramik zwischen Rhein, Weser und Main. UPA 47. Bonn 1998.

Kokkinidou – Nikolaidou (1997) *D. Kokkinidou – M. Nikolaidou:* Body imagery in the Aegean Neolithic: ideological implications of anthropomorphic figurines. In: J. Moore – E. Scott (eds): Invisible People and Processes. Writing gender and childhood into European archaeology. London – New York 1997: 88–112.

Kordos (1987) *L. Kordos:* Climatic and ecological changes in Hungary during the last 15,000 years. In: M. Pécsi – L. Kordos (eds): Holocene Environment in Hungary. Ottawa – Budapest 1987: 11–24.

Korkuti (1983) *M. Korkuti:* Vendbanimi neolitik i Kolshit (L'habitat néolithique de Kolshit). Iliria 13/2 (1983) 11–75.

Korkuti (1996) *M. Korkuti:* Neolithikum und Chalkolithikum in Albanien. Internationale Interakademische Kommission für die Erforschung der Vorgeschichte des Balkans 4. (Ed.: H. Hauptmann). Mainz am Rhein 1996.

Korek – Patay (1958) *J. Korek – P. Patay:* A Bükki-kultúra elterjedése Magyarországon (Die Verbreitung der Bükker Kultur in Ungarn). RégFüz II:2. Budapest 1958.

Korošec – Korošec (1973) *J. Korošec – P. Korošec:* Barutnica. Prilep 1973.

Kosse (1979) *K. Kosse:* Settlement Ecology of the Körös and Linear Pottery Cultures in Hungary. BAR IntSer 64. Oxford 1979.

Kotsakis (1996) *K. Kotsakis:* Habitation. The coastal settlements of Thessaly. In: G. A. Papathanassopoulos (ed.): Neolithic Culture in Greece. Athens 1996: 49–57.

Kotsakis (1999) *K. Kotsakis:* What tells can tell: social space and settlement in the Greek Neolithic. In: P. Halstead (ed.): Neolithic Society in Greece. Sheffield 1999: 66–76.

Kourtessi-Philippakis (1990) *G. Kourtessi-Philippakis:* Chronique des récherches sur le Paléolithique en Grèce. In: V. Chirica – D. Monah (eds): Le Paléolithique et le Néolithique de la Roumanie en contexte Européen. Bibl. Arch. Iassiensis 4. Iaşi 1990: 44–51.

Kovács (1985) *I. Kovács:* Archéologické výskumy v okrese Rimavska Sobota. Régészeti ásatások a Rimaszombati járásban (1978–1984). Gömöri Múzeum, Rimaszombat (Rimavská Sobota) 1985.

Kovács (2002) *I. B. Kovács:* A méhi istentriász és népe. (The divine triad at Méhi). Gömör-Kishont az őskorban I. Pozsony-Bratislava 2002.

Kozłowski (1973) *J. K. Kozłowski:* The problem of the so-called "Danubian Mesolithic". In: St. K. Kozłowski (ed.): The Mesolithic in Europe. Warszawa 1973: 315–330.

Kozłowski (1996) *J. K. Kozłowski:* Techno-morphological changes in the Early Holocene Lithic industries in Southeastern Europe. In: St. K. Kozłowski – H. G. K. Gebel (eds): Neolithic Chipped Stone Industries of the Fertile Crescent, and their contemporaries in adjacent regions. Berlin 1996: 137–144.

Kozłowski (1987) *St. Kozłowski:* The pre-neolithic base of early neolithic stone in Europe. In: J. K. Kozłowski – St. K. Kozłowski (eds.): Chipped Stone Industries of the Early Farming Cultures in Europe. Warszawa 1987: 9–18.

Kozłowski (1999) *St. K. Kozłowski:* The Nemrikian PPN lithic industry in Iraq and Syria. In: E. Cziesla – Th. Kersting – St. Pratsch (eds): Den Bogen spannen... Festschrift für Bernhard Gramsch zum 65. Geburtstag. Beiträge zur Ur- und Frühgeschichte Mitteleuropas 20. Weissbach 1999: 313–326.

Kozłowski (2002) *St. K. Kozłowski:* Nemrik. An aceramic village in Northern Iraq. Warszawa 2002.

Kozłowski – Kozłowski (1986) *J. K. Kozłowski – St. Kozłowski:* Foragers of Central Europe and their acculturation. In: M. Zvelebil (ed.): Hunters in Transition. Cambridge 1986: 95–108.

Kreiner – Pleyer (1999) *L. Kreiner – R. Pleyer:* Die "Venus von Aufhausen" – ein besonderes Gefäß der Münchshöfener Kultur. Vorträge der 17. Niederbayerischen Archäologietages. Rahden/Westf. 1999: 55–69.

Kreuz (1990) *A. Kreuz:* Die ersten Bauern Mitteleuropas. Eine archäobotanische Untersuchung zu Umwelt und Landwirtschaft der ältesten Bandkeramik. APL 23. Leiden 1990.

Kulczyczka-Leciewiczowa (1988) *A. Kulczyczka-Leciewiczowa:* Erste Gemeinschaften der Linienbandkeramik-Kultur auf polnischen Boden. ZfA 23 (1988) 137–182.

Kurucz (1989) *K. Kurucz:* A Nyíri Mezőség neolitikuma [The Neolithic of the Mezőség, Nyírség region]. Nyíregyháza 1989.

Kutzián (1944) *I. Kutzián*: A Körös-kultúra (The Körös Culture). DissPann II/23. Budapest 1944.

Kutzián (1977) *I. Bognár-Kutzián:* Ausgrabungen in Szakmár–Kisülés im Jahre 1975. MittArchInst 7 (1977) 13–17.

Kuzma (1990) *I. Kuzma:* Plastika Želiezovskej skupiny z Mužle–Čenkova (Plastik der Želiezovce-Gruppe aus Mužla–Čenkov). SlA 38 (1990) 429–452.

Küssner (1994) *M. Küssner:* Jüngeres Mesolithikum – älteres Neolithikum. Zur Neolithisierung im Mittelelbe-Saale-Gebiet (MESG). In: H.-J. Beier – R. Einicke (eds): Das Neolithikum im Mittelelbe-Saale-Gebiet und in der Altmark. Beiträge zur Ur- und Frühgeschichte Mitteleuropas 4. Wilkau–Hasslau 1994: 7–25.

Küster (1994) *H. Küster:* Highland and lowland exploitation in the Alps: the evidence from pollen data. In: P. Biagi – J. Nandris (eds): Highland Zone Exploitation in Southern Europe. Monographie di "Natura Bresciana" 20. Brescia 1994: 95–105.

Kyparissi-Apostolika (1998a) *N. Kyparisi-Apostolika:* The Significance of Theopetra cave for Greek Prehistory. In: M. Otte (ed.): Préhistoire d'Anatolie. Genèse de deux mondes I. ERAUL 85. Liège 1998: 241–252.

Kyparissi-Apostolika (1998b) *N. Kyparissi-Apostolika:* The excavations in Theopetra cave. In N. Kyparissi-Apostolika (ed.): Spilaio Theopetras – Theopetra Cave. Proceedings of the International conference, Trikala 1998: 17–36.

Kyparissi-Apostolika (2000) *N. Kyparissi-Apostolika:* The mesolithic/neolithic transition in Greece as evidenced by the data at Theopetra cave in Thessaly. DocPraehist 27 (2000) 133–140.

Larsson (1990a) *L. Larsson:* Dogs in fraction – symbols in action. In: P. M. Vermeersch – Ph. v. Peer (eds): Contributions to the Mesolithic of Europe. Leuven 1990: 153–160.

Larsson (1990b) *L. Larsson:* The Mesolithic of Southern Scandinavia. JWP 4 (1990) 257–309.

Larsson (2000) *L. Larsson:* Expression of art in the mesolithic society of Skandinavia. In: A. Butrimas (ed.): Prehistoric Art in the Baltic Region. Vilnius 2000: 31–61.

László (1998) *A. László:* Sur le début du néolithique de la Roumanie: quelques considérations concernant la période "Protostarčevo". In: M. Otte (ed.): Préhistoire d'Anatolie. Genèse de deux mondes I. ERAUL 85. Liège 1998: 175–191.

Lazăr (1974–75) *M. D. Lazăr:* Plastica culturii Vinča-Turdaş, dîn colecţiile Muzeului Judetean Hunedoara–Deva. Sargeţia 11–12 (1974–75) 11–18.

Lazarovici (1969) *Gh. Lazarovici:* Cultura Starčevo-Criş în Banat. ActaMN 6 (1969) 3–26.

Lazarovici (1970) *Gh. Lazarovici:* Cultura Vinča A în Banat. Acta MN 7 (1970) 473–488.

Lazarovici (1972) *Gh. Lazarovici:* Aşezarea neolitica în Parţa (Die neolithische Ansiedlung von Parţa). Tibiscus 2 (1972) 3–26.

Lazarovici (1976) *Gh. Lazarovici:* Fragen der neolithischen Keramik in Banat. ArchA Beiheft 13 (Festschrift Pittioni). Wien 1976: 203–234.

Lazarovici (1977a) *Gh. Lazarovici:* Gornea. Preistorie. Reşiţa 1977.

Lazarovici (1977b) *Gh. Lazarovici:* Die Beziehungen zur Vinča A Phase zu Nordthessalien und dem Südbalkan. Apulum 20 (1977) 19–26.

Lazarovici (1979) *Gh. Lazarovici:* Neoliticul Banatului. Cluj–Napoca 1979.

Lazarovici (1980) *Gh. Lazarovici:* Citeva probleme privînd sfîrşitul neoliticul tîmpuriu din Nord-Vestul României (Einige Fragen zum Ende des Frühneolithikums aus Nord-West Rumänien). ActaMN 17 (1980) 13–30.

Lazarovici (1981) *Gh. Lazarovici:* Die Periodisierung der Vinča-Kultur in Rumänien. PZ 56/2 (1981) 169–196.

Lazarovici (1983) *Gh. Lazarovici:* Die Vinča-Kultur und ihre Beziehungen zur Linienbandkeramik. NNU 52 (1983) 131–176.

Lazarovici (1984a) *Gh. Lazarovici:* Die Periodisierung der Starčevo-Kultur in Rumänien. III. Internationaler Thrakologischer Kongress, Wien 1980. Sofia 1984: 94–110.

Lazarovici (1984b) *Gh. Lazarovici:* Neoliticul tîmpuriu in România (Das Frühneolithikum in Rumänien). ActaMusPor 8: 49–104.

Lazarovici 1985 *Gh. Lazarovici:* Sincronisme etno-kulturale în neoliticul din Salaj şi din Vestul României. ActaMP 9 (1985) 69–92.

Lazarovici (1987–1988) *Gh. Lazarovici:* Sincronismele Vinča A – Starčevo-Criş (Les synchronismes Vinča A – Starčevo-Criş). ActaMN 24–25 (1987–88) 17–28.

Lazarovici (1993) *Gh. Lazarovici:* Aşezarea neolitica de la Zăuan II. Migraţie şi difuzine. Chalcoliticul Balcano-Anatolian. Propuneri pentru un model de analiza procesuala (Le site archéologique de Zăuan II. Migration et diffusion. La chalcolithique Balcano-Anatolienne. Un modele d'analyse procéssuale). Acta MP 17 (1993) 11–47.

Lazarovici (1998) *Gh. Lazarovici:* About the neolithisation process of the second migration of the Early Neolithic. In: F. Draşovean (ed.): The Late Neolithic of the Middle Danube Region. Timişoara 1998: 7–37.

Lazarovici – Draşovean – Maxim (2001) *Gh. Lazarovici – F. Draşovean – Z. Maxim:* Parţa I. 1–2. Timişoara: 2001.

Lazarovici – Maxim (1995) *Gh. Lazarovici – Z. Maxim:* Gura Baciului. Cluj–Napoca 1995.

Lazarovici – Németi (1983) *Gh. Lazarovici – J. Németi:* Neoliticul dezvolata din Nord-vestul României (Salajul, Satmarul şi Clujul). ActaMP 7 (1983) 17–60

Lech (1987) *J. Lech:* Mining and distribution of siliceous rocks among the first farming communities in Central Eastern Europe. In: J. K. Kozłowski – St. K. Kozłowski (eds.): Chipped Stone Industries of the Early Farming Cultures in Europe. Warszawa 1987: 369–380.

Leković (1988a) *V. Leković:* Zlatara – Ruma. In: D. Srejović (ed.): The Neolithic of Serbia. Belgrade 1988: 108–109.

Leković (1988b) *V. Leković:* Šašinci. In: D. Srejović (ed.): The Neolithic of Serbia. Belgrade 1988: 94–95.

Leković *(1990) V. Leković:* The Vinčanization of Starčevo culture. In: D. Srejović–N. Tasić (eds.): Vinča and its World. Beograd 1990: 67–74.

Lenneis (1982) *E. Lenneis:* Die Siedlungsverteilung der Linearbandkeramik in Österreich. ArchA 66 (1982) 1–19.

Lenneis (1988) *E. Lenneis:* Rosenburg. FÖ 27 (1988) 266–267.

Lenneis (1989) *E. Lenneis:* Zum Forschungsstand der ältesten Bandkeramik in Österreich. AKorr 19 (1989) 23–36.

Lenneis (1990) *E. Lenneis:* La céramique linéaire ancienne en Autriche: premiers resultats et recherches récentes. In: D. Cahen – M. Otte (eds): Rubané et cardial. Actes du College de Liège, Novembre 1988. ERAUL 39. Liège 1990: 61–63.

Lenneis (1991) *E. Lenneis:* Zu den ersten festen Wohnhäusern und Siedlungen im Raume Österreichs. MAGW 121 (1991) 121–136.

Lenneis (1992) *E. Lenneis:* Vorbericht über die Ausgrabungen 1988–1991 der linearbandkeramischen Siedlung in Rosenburg im Kamptal, Niederösterreich. ArchA 76 (1992) 19–37.

Lenneis (1995) *E. Lenneis:* Altneolithikum: Die Bandkeramik. In: Jungsteinzeit im Osten Österreichs. St. Pölten 1995: 11–56.

Lenneis (1997) *E. Lenneis:* Houseforms of the Central European Linear Pottery culture and the Balkan early neolithic – a comparison. Poročilo 24 (1997) 143–149.

Lenneis (2000) *E. Lenneis:* Hausformen der mitteleuropäischen Linearbandkeramik und des balkanischen Frühneolithikums im Vergleich. In: St. Hiller – V. Nikolov (eds): Karanovo III: Beiträge zum Neolithikum in Südosteuropa. Wien 2000: 383–388.

Lenneis (2001) *E. Lenneis:* The beginning of the Neolithic in Austria – a report about recent and current investigations. DocPraehist 28 (1991) 99–116.

Lenneis 2002 (2001) see *Lenneis – Lüning 2002 (2001)*

Lenneis – Lüning (1986a) *E. Lenneis – J. Lüning:* Neckenmarkt. FÖ 24/25 (1985/86[1986]) 218.
Lenneis – Lüning (1986b) *E. Lenneis – J. Lüning:* Neckenmarkt. FÖ 24/25 (1985/86[1986]) 207.
Lenneis – Lüning (2002 [2001]) *E. Lenneis – J. Lüning:* Die altbandkeramischen Siedlungen von Neckenmarkt und Strögen. UPA 82. Bonn 2002 [2001].
Lenneis – Stadler – Windl (1996) E. Lenneis – P. Stadler – H. Windl: Neue 14C-Daten zum Frühneolithikum in Österreich. Préhistoire Européenne 8 (1996) 97–116.
Letica (1967) *Z. Letica:* Miniature vessels from Vinča. ZRNM 5 (1967) 77–126.
Lichardus (1972) *J. Lichardus:* Zur Entstehung der Linearbandkeramik. Germania 50 (1972) 1–15.
Lichardus – Lichardus-Itten (1989–90) *J. Lichardus – M. Lichardus-Itten:* Der Komplex mit schwarz-, braun- und graupolierter Keramik und der Beginn des Mittelneolithikums in Südosteuropa. Starinar N.S. 40–41 (1989–90) 43–49.
Lichardus – Pavúk (1963) *J. Lichardus – J. Pavúk:* Bemerkungen zum präkeramischen Neolithikum in der Argissa Magula und zu seiner Existenz in Europa. SlA 11/2 (1963) 459–476.
Lichardus – Šiška (1970) *J. Lichardus – St. Šiška:* Záhranny výskum pohrebiska a sídliska Lengyelskej kultúry vo Svodíne roku 1965 (Rettrungsgrabung auf Gräberfelder und Siedlung der Lengyel-Kultur in Svodín im Jahre 1965). SlA 18/2 (1970) 311–352.
Lichardus-Itten (1993a) *M. Lichardus-Itten:* Zum Beginn des Neolithikums im Tal der Struma. Anatolica 19 (1993) 99–116.
Lichardus-Itten (1993b) *M. Lichardus-Itten:* La vallée du Strymon: Une route du Néolithique Ancien? In: V. Nikolov (ed.): Prähistorische Funde und Forschungen: Festschrift zum Gedenken an Prof. G. I. Georgiev. Sofia 1993: 69–72.
Lichardus-Itten et al. (2002) *M. Lichardus-Itten – J.-P. Démoule – L. Perničeva – M. Grebska-Kulowa – I. Kulov:* The site of Kovačevo and the beginnings of the neolithic period in southwestern Bulgaria. The French-Bulgarian excavations 1986–2000. In: M. Lichardus-Itten – J. Lichardus – V. Nikolov (eds): Beiträge zu jungsteinzeitlichen Forschungen in Bulgarien. Bonn 2002: 99–158.
Lichter (1993) *C. Lichter:* Untersuchungen zu den Bauten der südosteuropäischen Neolithikums. Internationale Archäologie 18. München 1993.
Lichter (2001) *C. Lichter:* Untersuchungen zu den Bestattungssitten des südosteuropäischen Neolithikums und Chalkolithikums. Heidelberger Akademie der Wissenschaften; Internationale Interakademische Kommission für die Erforschung der Vorgeschichte des Balkan 5. (Ed.: H. Hauptmann). Mainz am Rhein 2001.
Lindig – Schwitalla (1999) *S. Lindig – G. Schwitalla:* Das Steinzeitdorf von Hempler. In: Denkmalpflege und Kulturgeschichte. Hrsg. vom Landesamt für Denkmalpflege Hessen 1. Wiesbaden 1999: 26–32.
Litotheca database, Hungarian National Museum: www.ace.hu/litoth
Logan (2000) *B. Logan:* The changing game: Gravettian-Epigravettian hunting strategies in the Middle Danube. In: C. Bellier – P. Cattelain – M. Otte (eds): Hunting in Prehistory. ERAUL 51. Brussels 2000: 190–208.
Losits (1980) *F. Losits:* Neolithische Siedlung in Krasznokvajda. FolArch 31 (1980) 7–34.
Luca (1995–96) *S. A. Luca:* Die Vinča-Siedlung aus Rumess (Romos). Die A-Phase der Vinča-Kultur in Siebenbürgen. Sargeția 26 (1995–96) 45–62.

Luley (1992) *H. Luley:* Urgeschichtlicher Hausbau in Mitteleuropa. Grundlagenforschung, Umweltbedingungen und bautechnische Rekonstruktion. Bonn 1992.

Lüning (1982) *J. Lüning:* Forschungen zur bandkeramischen Besiedlung der Aldenhovener Platte im Rheinland. In: J. Pavúk (ed.): Siedlungen der Kultur mit Linearkeramik in Europa. Kolloquium Nové Vozokaný. Nitra 1982: 125–156.

Lüning (1984) *J. Lüning:* Neolithische Hausgrundrisse in Schwanfeld. Das archäologische Jahr in Bayern 1983. Stuttgart 1984: 31–32.

Lüning (1987) *J. Lüning:* Ausgrabungen zur ältesten Bandkeramik. AJB 1986. Stuttgart 1987: 33–34.

Lüning (1988a) *J. Lüning:* Außengraben als Traufabstützung. In: U. Boehlicke – D. von Brandt – J. Lüning – P. Stehli – A. Zimmermann: Der bandkeramische Siedlungsplatz Langweiler 8. Rheinische Ausgrabungen 28. Bonn 1988: 290–295.

Lüning (1988b) *J. Lüning:* Frühe Bauern in Mitteleuropa im 6. und 5. Jahrtausend v. Chr. JRGZM 35/1 (1988) 27–98.

Lüning (1991) *J. Lüning:* Besprechung von Shanks/Tilley 1987a. PZ 66 (1991) 235–236.

Lüning (1997) *J. Lüning:* Wohin mit der Bandkeramik? Programmatische Bemerkungen zu einem allgemeinen Problem am Beispiel Hessens. In: C. Becker – M. L. Dunkelman – C. Metzner-Nebelsick – H. Peter-Röcher – M. Roeder – B. Teržan (eds): Chronos. Beiträge zur prähistorischen Archäologie zwischen Nord- und Südosteuropa. Festschrift für Bernhard Hänsel. Espelkamp 1997: 23–57.

Lüning (1998) *J. Lüning:* L'organisation régionale des habitats rubanées: sites centreaux et sites secondaires (groupements de sites). Anthropologie et Préhistoire 109 (1998) 163–185.

Lüning (2000) *J. Lüning:* Steinzeitliche Bauern in Deutschland. Die Landwirtschaft im Neolithikum. UPA 58. Bonn 2000.

Lüning (2001 [2002]) see *Lenneis – Lüning (2001 [2002])*

Lüning – Lenneis (1986) *J. Lüning – E. Lenneis:* Strögen. FÖ 24–25 (1985–86[1986]) 218.

Lüning et al. (1989) *J. Lüning – U. Kloos – S. Albert:* Westliche Nachbarn der Bandkeramischen Kultur: die Keramikgruppen La Hoguette und Limburg. Germania 67 (1989) 355–393.

Lüning – Moddermann (1982) *J. Lüning – P. J. R. Modderman:* Hausgrundrisse der ältesten Bandkeramik aus Schwanfeld, Unterfranken. AJB 1981. Stuttgart 1982: 66–67.

Lüning – Stehli (1994) *J. Lüning – P. Stehli (eds.):* Die Bandkeramik im Merzbachtal auf der Aldenhovener Platte. Rheinische Ausgrabungen 36. Köln–Bonn 1994.

Macanova (2002) *V. Macanova:* Keramik aus der neolithischen Siedlung bei Rakitovo. In: M. Lichardus-Itten – J. Lichardus – V. Nikolov (eds): Beiträge zur jungsteinzeitlichen Forschungen in Bulgarien. Saarbücker Beiträge zur Altertumskunde 74. Bonn 2002: 191–223.
See also: Matsanova

Madden (1983) *M. Madden:* Social network system amongst hunter-gatherers considered within Southern Norway. In: G. Bailey (ed.): Hunter-Gatherer Economy in Prehistory. Cambridge 1983: 191–200.

Makkay (1972) *J. Makkay:* Eingeritzte und plastische Menschendarstellungen der transdanubischen Linienbandkeramik. In: Idole. Prähistorische Keramiken aus Ungarn. Ausstellung des Ungarischen Nationalmuseum Budapest im Naturhistorischen Museum Wien. Veröffentlichungen aus dem Naturhistorischen Musem Wien. N. F. 7 (1972) 16–19.

Makkay (1973) *J. Makkay:* "Shrine with bucranium" – a tentative interpretation of the Tartaria signs 3,5. Kadmos 12 (1973) 1–5.

Makkay (1974) *J. Makkay:* Das frühe Neolithikum auf der Otzaki Magula und die Körös-Starčevo-Kultur (Discussio). ActaArchHung 26 (1974) 131–154.

Makkay (1975a) *J. Makkay:* A bicskei neolithikus telep és temető [The neolithic settlement and graves at Bicske]. IKMK D. 104. Székesfehérvár 1975.

Makkay (1975b) *J. Makkay:* Über neolithische Opferformen. In: E. Anati (ed.): Les religions de la préhistoire. Symposium Valcamonica 1972. Capo di Ponte 1975: 161–173.

Makkay (1978) *J. Makkay:* Excavations at Bicske I: The Early Neolithic – The earliest Linear band Ceramic. Alba Regia 16 (1978) 9–60.

Makkay (1982) *J. Makkay:* Some comments on the settlement patterns of the Alföld Linear Pottery. In: J. Pavúk (ed.): Siedlungen der Kultur mit Linearkeramik in Europa. Internationales Kolloquium Nové Vozokaný 1981. Nitra 1982: 157–166.

Makkay (1983) *J. Makkay:* Foundation sacrifices in neolithic houses of the Carpatian Basin. In: E. Anati (ed.): The Intellectual Expressions of Prehistoric Man: Art and religion. Symposium Valcamonica 1979. Capo di Ponte 1983: 157–167.

Makkay (1984) *J. Makkay:* Early Stamp Seals in South-East Europe. Budapest 1984.

Makkay (1986) *J. Makkay:* Bauopfer in der Lengyel-Kultur und seine Beziehungen zu den Bauopferformen der Körös-Kultur und der Linienbandkeramik. In: B. Chropovský – H. Friesinger (eds): Internationales Symposium über die Lengyel-Kultur. Nitra – Wien 1986: 169–175.

Makkay (1987) *J. Makkay:* Kontakte zwischen der Körös-Starčevo-Kultur und der Linienbandkeramik. CommArchHung 1987: 15–24.

Makkay (1990a) *J. Makkay:* The Protovinča problem – as seen from the northernmost frontier. In: D. Srejović – N. Tasić (eds): Vinča and its World. Beograd 1990 113–122.

Makkay (1990b) *J. Makkay:* Knochen- Geweih- und Eberzahngegenstände der frühneolithischen Körös-Kultur. CommArchHung 1990: 23–28.

Makkay (1992) *J. Makkay:* Excavations at the Körös culture settlement at Endrőd–Öregszőlők 119 in 1986–1989. A preliminary report. In: S. Bökönyi (ed.): Cultural and Landscape Changes in South East Hungary I. Reports on the Gyomaendrőd project. Archaeolingua 1. Budapest: 121–193.

Makkay (1996) *J. Makkay:* Theories about the origin, the distribution and the end of the Körös culture. In: L. Tálas (ed.): At the Fringes of Three Worlds. Hunter-gatherers and farmers in the Middle Tisza Valley. Szolnok 1996: 35–49.

Makkay (2000) *J. Makkay:* Bisher unbeachtete Verzierungen der Feinkeramik der Körös-Kultur. In: St. Hiller – V. Nikolov (eds): Karanovo III: Beiträge zum Neolithikum in Südosteuropa. Wien 2000: 311–325.

Makkay – Starnini – Tulok (1996) *J. Makkay – E. Starnini – M. Tulok:* Excavations at Bicske–Galagonyás (Part III). The Notenkopf and Sopot-Bicske Cultural Phases. Quaderno/Società per la Preistoria e Protoistoria della Regione Friuli-Venezia Giulia 6. Trieste 1996.

Manson (1995) *J. L. Manson:* Starčevo pottery and neolithic development in the Central Balkans. In: W. Barnett – J. Hoopes (eds): The Emergence of Pottery. Washington 1995: 65–77.

Mantu (1998) *C.-M. Mantu:* Absolute chronology of neolithic cultures in Romania and relations with the Aegeo-Anatolian world. In: M. Otte (ed.): Préhistoire d'Anatolie. Genèse de deux mondes I. ERAUL 85. Liège 1998: 159–173.

Marangou (1991) *Chr. Marangou:* Maquettes d'embarcations: les débuts. In: R. Laffineur – L. Basch (eds): Thalassa. L'Egée préhistorique et la mer. Actes 3me rencontre égéenne international. Liège 1991: 21–42.

Marangou (1992) *Chr. Marangou:* EIDΩLIA. Figurines et miniatures du Néolithique Récent et du Bronze Ancien en Grèce. BAR IntSer 576. Oxford 1992.

Marangou (1997) *Chr. Marangou:* Neolithic micrography: miniature modelling at Dimitra. In: D. V. Grammenos: Neolithiki Makedonia. Athina 1997: 227–265.

Markevič (1965) *V. I. Markevič:* Issledovanja neolita na Sredniem Dniestre. KSIAKiev 1965 85–90.

Markevič (1974) *V. I. Markevič:* Bugo-Dnestrovska kultura na territorii Moldavii. Kišinov 1974.

Marosi (1936) *A. Marosi:* A székesfehérvári múzeum őskori csontszigonya [A prehistoric bone harpoon from the Székesfehérvár Museum] . ArchÉrt 49 (1936) 83–85.

Marosi – Somogyi (1990) *S. Marosi – S. Somogyi (eds):* Magyarország kistájainak katasztere I. MTA Földrajztudományi Kutatóintézet, Budapest 1990: 445–449.

Marton (2001) *E. Marton:* New approaches to the spinning and weaving of neolithic-aeneolithic people in the Carpathian Basin (The "shrewd process" and looms). In: J. Regenye (ed.): Sites and Stones. Lengyel culture in Western Hungary and beyond. A review of the current research. Veszprém 2001: 131–142.

Marton (2003) *T. Marton:* Mezolitikum a Dél-Dunántúlon – a somogyi leletek újraértékelése [Mesolithic in Southern Transdanubia – the Somogy finds re-evaluated]. In: G. Lőrinczy (ed.): Festschrift für István Fodor. MFMÉ-StudArch 9.

Mateiciucová (2001) *I. Mateiciucová:* Silexindustrie in der ältesten Linearbandkeramik-Kultur in Mähren und Niederösterreich auf der Basis der Silexindustrie des Lokalmesolithikums. In: R. Kertész – J. Makkay (eds): From the Mesolithic to the Neolithic. Proceedings of the International Archaeological Conference held in Szolnok 1996. Archaeolingua 11. Budapest 2001: 283–299.

Mateiciucová (2002a) *I. Mateiciucová:* Silexartefakte aus der ältesten und älteren LBK. Fundstellen in Brunn am Gebirge in Niederösterreich (Vorbericht). In: E. Bánffy (ed.): Prehistoric Studies. In memoriam Ida Bognár-Kutzián. Antaeus 25 (2002) 169–187.

Mateiciucová (2002b) *I. Mateiciucová:* Steinerne Spaltindustrie aus dem Gräberfeld in dr Flur "Siroká u lesa". In: V. Podborský et al.: Dvě pohřebiště neolitického lidu s lineárni keramikou ve Vedrovicích na Moravì (Zwei Gräberfelder des neolithischen Volkes mit Linearbandkeramik in Vedrovice in Mähren). Brno 2002: 231–233.

Matsanova (1996) *V. Matsanova:* Cult objects from the early neolithic site at the town Rakitovo. DocPraehist 23 (1996) 105–127.

Mattheußer (1991) *E. Mattheußer:* Die geographische Ausrichtung bandkeramischer Häuser. In: Studien zur Siedlungsarchäologie I. UPA 6. Bonn 1991.

Maurer (1981) *H. Maurer:* Linearkeramische Kultobjekte aus Niederösterreich. FÖ 20 (19881) 57–94.

Maurer (1982) *H. Maurer:* Neolithische Kultobjekte aus dem niederösterreichischen Manhartsbergbereich. Ein Beitrag zur jungsteinzeitlichen Geistesgeschichte. Mannus-Bibliothek 19. Hückeswagen 1982.

Maxim (1999) *Z. Maxim:* Neo-Eneoliticul din Transilvania. Cluj–Napoca 1999.

McPherron – Srejović (1971) *A. McPherron – D. Srejović:* Early Farming Cultures in Central Serbia (Eastern Jugoslavia). Kragujevac 1971.

Medzihradszky (2001) *Zs. Medzihradszky:* The holocene sequence of Keszthely–Úsztatómajor, Hungary. AnnHN 93 (2001) 5–12.

Medzihradszky – Járai-Komlódi (1996) *Zs. Medzihradszky – M. Járai-Komlódi:* Late Holocene vegetation history and the activity of man in the Tapolca Basin. AnnHM 88 (1996) 21–29.

Meier-Arendt (1989) *W. Meier-Arendt:* Überlegungen zur Herkunft der linienbandkeramischen Langhauses. In: S. Bökönyi (ed.): Neolithic of Southestern Europe and its Near Eastern Connections International Conference Szolnok–Szeged 1987. VAH 2. Budapest 1989: 183–189.

Meiklejohn (1978) *C. Meiklejohn:* Ecological aspects of population size and growth in late glacial and early post-glacial North-Western Europe. In: P. A. Mellars (ed.): The Early Post-Glacial Settlement of Europe. London 1978: 65–79.

Meiklejohn – Schentag – Venema (1984) *C. Meiklejohn – C. Schentag – A. Venema:* Socioeconomic change and patterns of pathology and variation in the mesolithic and neolithic of Western Europe: some suggestions: 75–100. In: M. N. Cohen – G. J. Armelagos (eds): Palaeopathology at the Origins of Agriculture. New York 1984: 51–73.

Meiklejohn – Zvelebil (1991) *C. Meiklejohn – M. Zvelebil:* Health status of European populations at the agricultural transition and the implications for the adoptation of farming. In: H. Bush – M. Zvelebil (eds): Health in Past Societies: Biocultural interpratations of human skeletal remains in archaeological contexts. BAR IntSer 567. Oxford 1991: 129–145.

Mellaart (1962) *J. Mellaart:* Excavations at Çatal Hüyük. AS 12 (1962) 41–65.

Mellaart (1963) *J. Mellaart:* Excavations at Çatal Hüyük. Second preliminary report. AS 13 (1963) 43–103.

Mellaart (1964) *J. Mellaart:* Excavations at Çatal Hüyük 1963. Third preliminary report. AS 14 (1964) 39–119.

Mellaart (1966) *J. Mellaart:* Excavations at Çatal Hüyük. Fourth preliminary report. AS 16 (1966) 165–191.

Mellaart (1975) *J. Mellaart:* The Neolithic of the Near East. London 1975.

Mészáros (1948) *Gy. Mészáros:* A Vázsonyi-medence mezolit- és neolitkori települései (The mesolithic and neolithic settlements in the Vázsony Basin). Veszprém 1948.

Meyer-Christian (1976) *W. Meyer-Christian:* Die Y-Pfostenstellung in Häusern der älteren Linearbandkeramik. BonnerJb 176 (1976) 1–25.

Meyers (1971) *J. Th. Meyers:* The origin of agriculture: an evaluation of three theories. In: St. Struever (ed.): Prehistoric Agriculture. New York 1971: 101–121.

Milisauskas (1986) *S. Milisauskas:* Early Neolithic Settlement and Society at Olszanica. Memoirs of the Museum of Anthropology. Ann Arbor, Mich. 1986.

Milisauskas (2002) *S. Milisauskas:* Early Neolithic. The first farmers in Europe, 7000–5500/5000 BC. In: S. Milisauskas (ed.): European Prehistory. A survey. New York – Boston – London – Moscow 2002: 143–192.

Milisauskas (ed., 2002) *S. Milisauskas (ed.):* European Prehistory. A survey. New York 2002.

Milisauskas – Kruk (1989) *S. Milisauskas – J. Kruk:* Neolithic economy in Central Europe. JWP 3–4 (1989) 403–446.

Milojčić (1949) *V. Milojčić:* Chronologie der jüngeren Steinzeit Mittel- und Südosteuropas. Berlin 1989.

Milojčić (1956) *V. Milojčić:* Die erste präkeramische bäuerliche Siedlung der Jungsteinzeit in Europa. Germania 34 (1956) 208–210.

Milojčić (1959) *V. Milojčić:* Ergebnisse der deutschen Ausgrabungen in Thessalien 1953–1958). JRGZM 6 (1959) 1–56.

Milojčić (1960) *V. Milojčić:* Präkeramisches Neolithikum auf der Balkanhalbinsel. Germania 38 (1960) 320–335.

Milojčić – Milojčić-Zumbusch (1971) *V. Milojčić – J. von Milojčić-Zumbusch:* Die deutschen Ausgrabungen auf der Otzaki-Magula in Thessalien I. Das frühe Neolithikum. BAM 10. Bonn 1971.

Milojčić et al. (1962) *V. Milojčić – J. Boessneck – M. Hopf:* Die deutschen Ausgrabungen auf der Argissa Magula in Thessalien. BAM 2. Bonn 1962.

Minichreiter (1990) *K. Minichreiter:* Starčevačko naselje u Pepelanama kod Virovitice. VAMZ 1990: 17–40.

Minichreiter (1992a) *K. Minichreiter:* Starčevačka kultura u Sjevernoj Hrvatskoj. Zagreb 1992.

Minichreiter (1992b) *K. Minichreiter:* Ranoeneoliticka arhitektura sjeverne Hrvatske (Frühneolithische Architektur Nordkroatiens). Poročilo 20 (1992) 17–26.

Minichreiter (1992c) *K. Minichreiter:* Peči u Starčevačkom naselju kod Zadubrlavlja. OA 16 (1992) 37–47.

Minichreiter (1993a) *K. Minichreiter:* Arhitektura starčevačkog naselja kod Zadubravlja. Hrvatsko Arh. Društvo 16 (1993) 97–111.

Minichreiter (1993b) *K. Minichreiter:* Nalazi Starčevačke kulture u Osijeku kak prolog daljem upoznavanju najstarijeg neseljavanja istočne Slavonije. OZ 22–23 (1993) 7–19.

Minichreiter (1996–1997) *K. Minichreiter:* Zoomorfna idoloplastika obredno-ukopnog prostora starčevačkog lokaliteta na Galovu u Slavonskom Brodu (Zoomorphic idols of the Starčevo ceremonial and burial area site at Galovo, Slavonski Brod). Prilozi Instituta za arheologiju u Zagrebu 13–14 (1996–97) 7–22.

Minichreiter (1997a) *K. Minichreiter:* Otkrice a Lukaču i Požegi prilog poznavanju topografije naselja starčevačke kulture u Sjevernoj Hrvatskoj (Entdeckung in Lukač und Požega als ein Beitrag zur Kenntnis der Topographie der Siedlungen der Starčevo-Kultur in Nordkroatien). Prilozi Instituta za arheologiju u Zagrebu 11–12 (1994–95[1997]) 7–36.

Minichreiter (1997b) *K. Minichreiter:* Otkrice najstarijeg bunara na tlu Hrvatske u arheološkim istrazivanjima kod Slavonskog Broda (Discovery of the oldest well on the territory of Croatia during archaeological investigations in the area of Slavonski Brod). Hrvat. Vode 5 (1997) 215–221.

Minichreiter (1998) *K. Minichreiter:* The oldest neolithic water-well from the eraly Starčevo settlement near Slavonski Brod. In: H. Koschik (ed.): Brunnen in der Jungsteinzeit. Internationaler Symposium in Erkelenz. Köln 1998: 25–29.

Minichreiter (2001) *K. Minichreiter:* The architecture of Early and Middle neolithic settlements of the Starčevo culture in Northern Croatia. DocPraeh 28 (2001) 199–214.

Miracle (1997) *P. Miracle:* Early Holocene foragers in the Karst of Northern Istria. Poročilo 24 (1997) 43–61.

Miracle – O'Brien (1998) *P. T. Miracle – Chr. O'Brien:* Seasonality of recource use and site occupation at Badanj, Bosnia-Herzegovina: Subsistence stress in an increasingly seasonal environment? In: Th. J. Rocek – O. Bar-Yosef (eds): Seasonality and Sedentism. Cambridge/Mass. 1998: 41–74.

Mirazón Lahr – Foley – Pinhasi (2000) *M. Mirazón Lahr – R. A. Foley – R. Pinhasi:* Expected regional patterns of mesolithic – neolithic human population admixture in Europe based on archaeological evidence. In: C. Renfrew – K. Boyle (eds): Archaeogenetics: DNA and the population history of Europe. McDonalds Institute monographs. Oxford 2000: 81–88.

Mithen (1991) *St. Mithen:* Thoughtful Foragers. A study of prehistoric decision making. Cambridge 1991.

Mithen (1996a) *St. Mithen:* The Prehistory of the Mind. A search for the origins of art, religion and science. London 1996.

Mithen (1996b) *St. Mithen:* Ecological interpretations of palaeolithic art. In: R. W. Preucel – I. Hodder (eds): Contemporary Archaeology in Theory. A reader. Oxford 1996: 79–96.

Mithen (1998) *St. Mithen:* The supernatural beings of prehistory and the external storage of religious ideas. In: C. Renfrew – Chr. Scarre (eds): Cognition and Material Culture: the archaeology of symbolic storage. Cambridge 1998: 97–106.

Modderman (1972) *P. J. R. Modderman:* Die Hausbauten und Siedlungen der Linienbandkeramik in ihrem westlichen Bereich. In: H. Schwabedissen (ed.): Die Anfänge des Neolithikums vom Orient bis Nordeuropa. Fundamenta A3. Köln–Wien 1972: 77–84.

Modderman (1988) *P. J. R. Modderman:* The Linear Pottery Culture: diversity in uniformity. BROB 38 (1988) 63–139.

Monah (1991) *D. Monah:* L'exploitation du sel dans les Carpates orientales et ses rapports avec la culture de Cucuteni-Tripolje. In: V. Chirica – D. Monah (eds): Le paléolithique et le néolithique de la Roumanie en contexte Européen. Bibl. Arch. Iassiensis 4. Iaşi 1991: 387–400.

Montagnari-Kokelj (1993) *E. Montagnari-Kokelj:* The transition from Mesolithic to Neolithic in the Trieste Karst. Poročilo 21 (1993) 69–83.

MRT 1 (1968) *K. Bakay – N. Kalicz – K. Sági:* Veszprém megye régészeti topográfiája. A keszthelyi és a tapolcai járás. Magyarország régészeti topográfiája (Archaeological Topography of Hungary) 1. Budapest 1968.

MRT 2 (1969) *I. Éri – M. Kelemen – I. Torma:* Veszprém megye régészeti topográfiája. A veszprémi járás. Magyarország régészeti topográfiája (Archaeological Topography of Hungary) 2. Budapest 1969.

MRT 3 (1970) *K. Bakay – N. Kalicz – K. Sági:* Veszprém megye régészeti topográfiája. A devecseri és a sümegi járás. Magyarország régészeti topográfiája (Archaeological Topography of Hungary) 3. Budapest 1970.

MRT 9 (1993) *I. Dinnyés – K. Kővári – J. Kvassay – Zs. Miklós – S. Tettamanti – I. Torma:* Pest megye régészeti topográfiája XIII/2.köt. A szobi és a váci járás. Magyarország régészeti topográfiája (Archaeological Topography of Hungary) 9. Budapest 1993.

Müller (1964) *H.-H. Müller:* Die Haustiere der mitteldeutschen Bandkeramik. Berlin 1964.

Müller (1996) *R. Müller:* A honfoglalásig. (Till the Hungarian Conquest Period). *in:* L. Vándor (ed.): Képek 1100 esztendő Zala megyei történéseiből [Pictures from the 1100 years-old history of County Zala]. Zalaegerszeg 1996: 7.

M. Virág (1989) *Zs. M. Virág:* Jungsteinzeit (Neolithikum) und Frühkupferzeit. In: R. Müller (ed.): Sieben Jahrtausende am Balaton. Von der Ur- und Frühgeschichte bis zum Ende der Türkenkriege (Sonderausstellung). Mannheim 1998: 17–23.

M. Virág (1992) *Zs. M. Virág:* Újkőkori és középső rézkori telepnyomok az M0 autópálya szigetszentmiklósi szakaszánál (Neolithische und hochkupferzeitliche Siedlungsspuren an der Autobahnstrecke M0 bei Szigetszentmiklós) In: P. Havassy – L. Selmeczy (eds): Régészeti kutatások az M0 autópálya nyomvonalán I (Archaeological Researches on the Line of Motorway M0). BTM műhely 5. Budapest 1992: 15–60.

M. Virág (1996) *Zs. M. Virág:* Újkőkor és korai rézkor [Neolithic and Early Chalcolithic]. In: L. Költő – L. Vándor (eds): Évezredek üzenete a láp világából (Régészeti kutatások a Kis-Balaton területén 1979–1992) [Message from the moorland. Archaeological investigations in the Little Balaton region]. Kaposvár–Zalaegerszeg 1996: 16–20.

Nagy (1998 [1995–96]) *E. Gy. Nagy:* Az Alföldi Vonaldíszes kerámia kultúrájának kialakulása (Die Herausbildung der Alfölder Linearbandkeramik I–II). DMÉ 1995–96 (1998) 53–150.

Nagy-Bodor (1988) *E. Nagy-Bodor:* A Balaton pannóniai és holocén képződményeinek palynológiai vizsgálata (Palynological study of Pannonian and holocene deposits from Lake Balaton). MÁFIJ 1986 (1988) 535–568.
see also: Bodor

Nagy-Bodor – Cserny (1997) *E. Nagyné Bodor – T. Cserny:* A Keszthelyi-öböl vízzel borítottságának fejlődéstörténete [The development of the water-bound history of the Keszthely bay]. Hidrológiai Közlöny 77/1–2 (1997) 98–100.

Nagy-Bodor – Cserny (1998) *E. Nagy-Bodor – T. Cserny:* A Kis-Balaton térségének magasabbrendű növényzetével kapcsolatos kutatási eredmények [Research of the superior flora in the Little Balaton region]. A Magyar Hidrológiai Társaság Nyugat-Dunántúli területi Szervezete és a Nyugat-Dunántúli Vízügyi Igazgatóság kiadványa. Keszthely 1998, márc. 24.

Nagy-Bodor – Járai-Komlódi (1999) *E. Nagyné Bodor – M. Járai-Komlódi:* Palinológiai vizsgálatok a tapolcai medencében. I. Vízi és mocsári növények a holocén és későglaciális időkben [Palynological investigation in the Tapolca Basin. I. Aquatic and uliginal plants in the Holocene and the Late Glacial Periods]. Hidrológiai közlöny 79/6 (1999) 332–333.

Nagy-Bodor – Járai-Komlódi – Medve (1999) *E. Nagyné Bodor – M. Járai-Komlódi – A. Medve:* Late Glacial and Post-Glacial pollen records and inferred climatic changes from Lake Balaton and the Great Hungarian Plain. In: M. B. Hart (ed.): Climates: Past and present. Geological Society, Special publications 181. London 1999: 121–133.

Nanoglou (2001) *Str. Nanoglou:* Social and monumental space in Neolithic Thessaly, Greece. EJA 3–4 (2001) 303–322.

Nestor et al. (1950) *I. Nestor et al.:* Probleme noi in legatura cu neoliticul din R.P.R. SCIV 1 (1950) 208–214.

Nestor et al. (1951) *I. Nestor et al.:* Săpăturile de pe santierele Valea Jijiei (Iaşi – Botoşani – Dorohoi) in anul 1950. SCIV 2 (1951) 51–76.

Neugebauer-Maresch (1995) *Chr. Neugebauer-Maresch:* Mittelneolithikum: Die Bemaltkeramik. In: J.-W. Neugebauer (ed.): Die Jungsteinzeit im Osten Österreichs. St. Pölten–Wien 1995: 57–107.

Neumann (1956) *E. Neumann:* Die große Mutter. Zürich 1956.

Newell et al. (1990) *R. Newell – D. Kielmann – Constandze-Westermann, T. – Van der Sanden, W. – Van Gijn, A.:* An inquiry into the ethnic resolution of mesolithic regional groups. Leiden 1990.

Nica (1976) *M. Nica:* La culture Dudeşti en Olténie. Dacia N.S. 20 (1976) 71–103.

Nica (1977) *M. Nica:* Nouvelles données sur le néolithique ancien d'Olténie. Dacia N.S. 21 (1977) 13–54.

Nica (1995) *M. Nica:* La groupe culturel Cîrcea-Gradinile dans le contexte du néolithique balcanique şi anatolien. ActaMN 32 (1995) 11–28.

Nica (2000) *M. Nica:* Die mesolithischen und neolithischen Kulturen Olteniens im Kontext des mittel- und südosteuropäischen Neolithikums. AnB S. N. 7–8 (1999–2000) 133–160.

Nikolov (1974) *B. Nikolov:* Gradešnica. Sofia 1974.

Nikolov (1975) *B. Nikolov:* Šeliste ot starija neolit pri s. Gradešnica, Vracanski okrit (Site de néolithique ancien près du village Gradešnica, département Vraca). Arheologia (Sofia) 17/1 (1975) 25–40.

Nikolov (1984) *B. Nikolov:* Krivodol – drevni kulturi. Sofia–Vraca 1984.

Nikolov (1989a) *V. Nikolov:* Das frühneolithische Haus von Sofia–Slatina: eine Untersuchung zur vorgeschichtlichen Bautechnik. Germania 67 (1989) 1–49.

Nikolov (1989b) *V. Nikolov:* Das Flusstal der Struma als Teil der Straße von Anatolien nach Mitteleuropa. In: S. Bökönyi (ed.): Neolithic of South Eastern Europe and its Near Eastern Connections. International Conference Szolnok–Szeged 1987. VAH 2. Budapest 1989: 191–200.

Nikolov (1992) *V. Nikolov:* Mittelneolithische Keramik aus Karanovo: typologische Charakteristik. In: M. Garašanin – D. Srejović (eds).: Hommage à Nikola Tasić. Balcanica 23 (1992) 121–131.

Nikolov (1998) *V. Nikolov:* The circumpontic cultural zone during the 6th Millennium BC. DocPraehist 25 (1998) 81–89.

Nikolov (1999) *V. Nikolov:* Cultural and chronological problems of the Early Neolithic in present Western Bulgaria. Starini. Journal of Balkan Archaeology 1999/2: 59–65.

Nikolov (2001) *V. Nikolov:* Slatina–Sofia: Data on the early farming cult. In: F. Draşovean (ed.): Festschrift für Gheorghe Lazarovici. Timişoara 2001: 19–31.

Nikolov (2002) *V. Nikolov:* Problems of cultural development and chronology in the Early Neolithic of West Bulgaria. In: M. Lichardus-Itten – J. Lichardus – V. Nikolov (eds): Beiträge zu jungsteinzeitlichen Forschungen in Bulgarien. Bonn 2002: 159–163.

Nikolova (1998) *L. Nikolova:* Neolithic sequence: the Upper Struma valley in Western Thrace. DocPraehist 25 (1998) 99–131.

Nilsson (1950) *M. P. Nilsson:* The Minoan-Mycenean Religion and its Survival in Greek Religion. Second, revised edition. Lund 1950.

Nițu (1972) *A. Nițu:* Reprezentarile zoomorfne plastike pe ceramica neo-eneolitica. ArhMold 7 (1972) 9–96.

Nițu (1973–74) *A. Nițu:* Un vas antropomorf de tip Stoicani-Aldeni de la Suceveni (Galați). Carpica 6 (1973–74) 7–15.

Oravecz (1997) *H. Oravecz:* Dévaványa–Barcéi kishalom. A Körös-kultúra fiatalabb (Protovinča) szakaszának telepe és temetkezése (Late Körös /Protovinča/ settlement and burial at Dévaványa–Barcéi kishalom). CommArchHung 1997 5–25.

Ortutay (1981) *Gy. Ortutay (ed.):* Magyar néprajzi lexikon [Encyclopaedia of Hungarian Ethnography]. Budapest 1981.

Otte (2000) *M. Otte:* The history of European populations as seen by archaeology. In: C. Renfrew – K. Boyle (eds): Archaeogenetics: DNA and the population history of Europe. McDonalds Institute monographs. Oxford 2000: 41–44.

Otto (1963) *R. Otto:* Das Heilige. Über das Irrationale in der Idee des Göttlichen und sein Verhältnis zum Rationalen. München 1963.

A. Özdoğan (1999) *A. Özdoğan:* Cayönü. In: M. Özdoğan – N. Başgelen (eds): Neolithic in Turkey. The cradle of civilization. New discoveries. Istanbul 1999: 35–64.

Özdoğan (1983) *M. Özdoğan:* Pendik: a Neolithic site of Fikirtepe culture in the Marmara region. In: R. Boehmer – H. Hauptmann (eds): Beiträge zur Altertumskunde Kleinasiens. Festschrift für K. Bittel. Mainz 1983: 401–411.

Özdoğan (1993) *M. Özdoğan:* Vinča and Anatolia: a new look at a very old problem. Anatolica 19 (1993) 173–193.

Özdoğan (1995) *M. Özdoğan:* Neolithisation of Europe: a view from Anatolia. Poročilo 22 (1995) 25–61.

Özdoğan (1996) *M. Özdoğan:* Hoca Çeşme: an early neolithic Anatolian colony in the Balkans? In: P. Anreiter – L. Bartosiewicz – E. Jerem – W. Meid (eds): Man and the Animal World. Studies in archaeozoology, archaeology, anthropology and palaeolinguistics in memoriam Sándor Bökönyi. Archaeolingua 8. Budapest 1998: 435–451.

Özdoğan (1997) *M. Özdoğan:* The beginning of Neolithic economies in southeastern Europe: an Anatolian perspective. EJA 5/2 (1997) 1–33.

M. Özdoğan (1999) *M. Özdoğan:* Northwestern Turkey: Neolithic cultures in between the Balkans and Anatolia. In: M. Özdoğan – N. Başgelen (eds): Neolithic in Turkey. The cradle of civilization. New discoveries. Istanbul 1999: 203–224.

Özdoğan (2000) *M. Özdoğan:* The appearence of early neolithic cultures in Northwestern Turkey. Some problems. In: St. Hiller – V. Nikolov (eds): Karanovo III: Beiträge zum Neolithikum in Südosteuropa. Wien 2000: 165–170.

Özdoğan – Gatsov (1998) *M. Özdoğan – I. Gatsov:* The aceramic neolithic period in Western Turkey and the Aegean. Anatolica 24 (1998) 209–232.

Papathanassopoulos (1996) *G. A. Papathanassopoulos (ed.):* Neolithic Culture in Greece. Athens.

Paul (1970) *I. Paul:* Şăpăturile din vara anului 1960 de la Ocna Sibiului. MCA 9 (1970) 97–104.

Paul (1995) — *I. Paul:* Aspekte des Karpatisch-Balkanisch-Donauländischen Neolithikum (Die Präcriş-Kultur). In: Vorgeschichtliche Untersuchungen in Siebenbürgen. Alba Iulia 1995: 28–68.

Păunescu (1962) — *A. Păunescu:* Cu privire la perioada de sfărşit a epipaleoliticului in Nord-Vestul şi Nord-Estul României şi unele persistente ale lui in neoliticul vechi. SCIV 15/3 (1962) 321–336.

Păunescu (1987) — *A. Păunescu:* Les industries lithiques du Néolithique Ancien de la Roumanie et quelques considérations sur l'inventaire lithique des cultures du néolithique moyen de cette contrée. In: J. K. Kozłowski – St. K. Kozłowski (eds.): Chipped Stone Industries of the Early Farming Cultures in Europe. Warszawa 1987: 76–94.

Pavlů (1966) — *I. Pavlů:* Early "myths" relating to the neolithic society. AR 18 (1966) 700–720.

Pavlů (1981) — *I. Pavlů:* Altneolithische Häuser in Böhmen. AR 33 (1981) 534–543.

Pavlů (1982) — *I. Pavlů:* Die Entwicklung des Siedlungsareals Bylany 1. In: J. Pavúk (ed.): Siedlungen der Kultur mit Linearkeramik in Europa. Internationales Symp. Nové Vozokaný 1981. Nitra 1982: 193–206.

Pavlů (2000) — *I. Pavlů:* Life on a Neolithic Site. Bylany – situational analysis of artefacts. Praha 2000.

Pavlů et al. (1986) — *I. Pavlů – J. Růlf – M. Zápotocká:* Theses on the Neolithic site of Bylany. PA 77 (1986) 288–412.

Pavlů – Vokolek (1992) — *I. Pavlů – V. Vokolek:* Early Linear Pottery culture in the East Bohemian Region. PA 83 (1992) 41–87.

Pavlů – Vokolek (1996) — *I. Pavlů – V. Vokolek:* The neolithic settlement at Holohlavy (Hrádec Králové). PA 87 (1996) 5–60.

Pavúk (1962) — *J. Pavúk:* Gliederung der Volutenkeramik in der Slowakei. ŠtZ 9 (1962) 5–20.

Pavúk (1969) — *J. Pavúk:* Chronologie der Želiezovce-Gruppe. SlA 17 (1969) 269–327.

Pavúk (1972) — *J. Pavúk:* Neolithisches Gräberfeld in Nitra. SlA 20 (1972) 5–105.

Pavúk (1976) — *J. Pavúk:* Über der Kontakte zwischen Balkan und Mitteleuropa in Neolithikum. Godišnjak Sarajevo 13 (1976) 33–43.

Pavúk (1980a) — *J. Pavúk:* Ältere Linearkeramik in der Slovakei. SlA 28 (1980) 7–90.

Pavúk (1980b) — *J. Pavúk:* Problem der Genese der Kultur mit Linearkeramik im Lichte ihrer Beziehungen zur Starčevo-Criş Kultur. In: J. Kozłowski– J. Machnik (eds): Problèmes de la néolithisation dans certaines régions de l'Europe. Actes du colloque international Kraków–Mogilany 1979. Wroclaw 1980: 163–174.

Pavúk (1981) — *J. Pavúk:* Ùmenie a život dobý kamennej. ASlA 13. Bratislava 1981.

Pavúk (1994) — *J. Pavúk:* Zur relativen Chronologie der älteren Linearkeramik. JAMÉ 36 (1994[1995]) 135–149.

Pavúk (1996) — *J. Pavúk:* Zur Frage der Verbreitung des Neolithikums auf dem Zentralbalkan und in Mitteleuropa. In: F. Draşovean (ed.): The Vinča Culture, its Role and Cultural Connections. Timişoara 1996: 23–40.

Pavúk (1997) — *J. Pavúk:* The Vinča culture and the beginning of the Linear Pottery. In: M. Lazić (ed.): Antidóron. Completis LXV annis Dragoslavo Srejović ab amicis collegis discipulis oblatum. Centre for Archaeological research/University of Belgrade, Faculty of Philosophy 17. Belgrade 1997: 167–178.

Pavúk – Cohadziev (1984) *J. Pavúk – M. Cohadziev:* Neolithische Tell-Siedlung bei Gălăbnik in Westbulgarien. SlA 32 (1984) 195–228.

Pécsi (1981) *M. Pécsi (ed.):* A Dunántúli dombság (Dél-Dunántúl) [The Transdanubian Hill-Country. /Southern Transdanubia/]. Budapest 1981.

Perlès (1979) *C. Perlès:* Des navigateurs mediterranéens il y a 10000 ans. La Recherche 10/96 (1979) 82–83.

Perlès (1987) *C. Perlès:* Les industries du néolithique "précéramique" de Grèce: nouvelles études, nouvelles interpretations. In: J. K. Kozłowski – St. K. Kozłowski (eds.): Chipped Stone Industries of the Early Farming Cultures in Europe. Warszawa 1987: 19–39.

Perlès (1989) *C. Perlès:* La néolithisation de la Grèce. In: A. Aurenche – J. Cauvin (eds): Néolithisations. Proche et Moyen Orient, Méditerranée Orientale, Nord de l'Afrique, Europe Méridionale, Chine, Amérique de Sud. BAR IntSer 516. Oxford 1989.

Perlès (1990) *C. Perlès:* Franchthi V. Bloomington, Ind. 1990.

Perlès (1993) *C. Perlès:* Les début du néolithique en Grèce. La Recherche 266 (1993) 642–650.

Perlès (1999) *C. Perlès:* Long-term perspectives on the occupation of the Franchthi cave: continuity and discontinuity. In: G. Bailey – E. Adam – E. Panagopoulou – C. Perlès – K. Zachos (eds): The Palaeolithic Archaeology of Greece and its Adjacent Areas. BSA Studies 3. London 1999: 311–318.

Perlès (2001) *C. Perlès:* The Early Neolithic in Greece. The first farming communities. Cambridge world archaeology. Cambridge, etc. 2001.

Perničeva (1990) *L. Perničeva:* Le site de Kovačevo, Neolithique ancien, dans le department de Blagoevgrad. SP 10 (1990) 142–196.

Perničeva (1995) *L. Perničeva:* Prehistoric cultures in the Middle Struma valley: Neolithic and Eneolithic. In: D. W. Bailey – I. Panayotov (eds): Prehistoric Bulgaria. Madison, Wis. 1995: 99–140.

Petrasch (1984) *J. Petrasch:* Typologie und Funktion neolithischer Öfen in Mittel- und Südosteuropa. Magisterhausarbeit. Tübingen 1984.

Petrasch (1990) *J. Petrasch:* Mittelneolithische Kreisgrabenanlagen in Mitteleuropa. BRGK 71 (1990) 407–564.

Petrasch (2001) *J. Petrasch:* "Seid fruchtbar und mehret euch und füllet die Erde und machet sie euch untertan": Überlegungen zur demographischen Situation der bandkeramischen Landnahme. AKorr 31 (2001) 13–25.

Petrović (1976) *J. Petrović:* Golokut–Vizić, praistorijsko naselje. AP 18 (1976) 11–22.

Petrović (1986–87) *J. Petrović:* Zemunica u naselju starčevačke kulture na Golokutu (Erdhütten in der Siedlung der Starčevačkaer Kultur auf Golokut). RVM 30 (1986–87) 13–28.

Petrović (1990) *J. Petrović:* A contribution to the study of autonomous predecessors of the Vinča culture in Srem. In: D. Srejović – N. Tasić (eds): Vinča and its World. Belgrade 1990: 85–89.

Pinhasi – Foley – Mirazón Lahr (2000) *R. Pinhasi – R. A. Foley – M. Mirazón Lahr:* Spatial and temporal patterns in the Mesolithic–Neolithic archaeological record. In: C. Renfrew – K. Boyle (eds): Archaeogenetics: DNA and the population history of Europe. McDonalds Institute monographs. Oxford 2000: 45–56.

Price (1985) *T. D. Price:* Complex foragers in Southern Skandinavia. In: T. D. Price – J. A. Brown (eds): Prehistoric Hunter-Gatherers: the emergence of cultural complexity. London 1985: 341–364.

Price (1987) *T. D. Price:* The Mesolithic of Western Europe. JWP 1 (1987) 225–305.

Price (1989) *T. D. Price:* The reconstruction of mesolithic diets. In: C. Bonsall (ed.): The Mesolithic in Europe: Proceedings of the Third International Symposium. Edinburgh 1989: 48–59.

Price (1999) *T. D. Price:* Human population in Europe during the Mesolithic. In: E. Cziesla – Th. Kersting – St. Pratsch (eds): Den Bogen spannen... Festschrift für Bernhard Gramsch zum 65. Geburtstag. Beiträge zur Ur- und Frühgeschichte Mitteleuropas 20. Weissbach 1999: 185–195.

Price (2000) *T. D. Price:* Europe's first farmers: an introduction. In: T. D. Price (ed.): Europe's First Farmers. Cambridge 2000: 1–18.

Price – Brown (1985) *T. D. Price – J. A. Brown:* Aspects of hunter-gatherer complexity. In: T. D. Price – J. A. Brown (eds): Prehistoric Hunters-Gatherers. The emergence of social complexity. London 1985: 3–20.

Price et al. (1995) *T. D. Price – A.-B. Gebauer – L. H. Keeley:* The spread of farming into Europe North of the Alps. In: T. D. Price – A.-B. Gebauer (eds): Last Hunters, First Farmers. School of America Research, Advanced Seminar series. Santa Fe 1995: 95–126.

Price et al. (2001) *T. D. Price – R. A. Bentley – J. Lüning – D. Gronenborn – J. Wahl:* Prehistoric human migration in the Linearbandkeramik of Central Europe. Antiquity 75 (2001) 593–603.

Pucher (2002[2001]) *E. Pucher:* Tierknochen. Viehvirtschaft und Jagd zur Zeit der ältesten Linearbandkeramik von Neckenmarkt (Burgenland) und Strögen (Niederösterreich). Anmerkungen zu den linearbandkeramischen Tierknochenfunden aus Neckenmarkt und Strögen aus aktueller Licht. In: E. Lenneis – J. Lüning: Die altbandkeramischen Siedlungen von Neckenmarkt und Strögen. UPA 82. Bonn 2001: 258–270.

Pusztai (1957) *R. Pusztai:* Mezolitikus leletek Somogyból (Mesolithische Funde im Komitat Somogy). JPMÉ 1957: 95–105.

Pyke (1996) *G. Pyke:* Stratigraphy. Structures and architecture. In: R. J. Rodden – G. Pyke – P. Yiouni – K. A. Wardle.: Nea Nikomedeia I: The excavation of an early neolithic village in Northern Greece 1961–1964. The excavation and the ceramic assemblage. BSA Suppl. 25. Oxford – Northampton 1996: 9–53.

Quitta (1960) *H. Quitta:* Zur Frage der ältesten Bandkeramik in Mitteleuropa. PZ 38 (1960) 153–188.

Quitta (1962) *H. Quitta:* Zur ältesten Bandkeramik in Mitteleropa. In: K.-H. Otto (ed.): Aus Ur- und Frühgeschichte. Berlin 1962: 87–107.

Quitta (1971) *H. Quitta:* Der Balkan als Mittler zwischen Vorderem Orient und Europa. In: F. Schlette (ed.): Evolution und Revolution im Alten Orient und im Europa. Das Neolithikum als historische Erscheinung. Berlin 1971: 38–63.

Raczky (1976) *P. Raczky:* A Körös-kultúra leletei Tiszajenőn (Funde der Körös-Kultur in Tiszajenő). ArchÉrt 103 (1976) 171–189.

Raczky (1977) *P. Raczky:* Szajol-Felsőföld [excavation report]. ArchÉrt 104 (1977) 263.

Pavúk – Cohadziev (1984) *J. Pavúk – M. Cohadziev:* Neolithische Tell-Siedlung bei Gălăbnik in Westbulgarien. SlA 32 (1984) 195–228.

Pécsi (1981) *M. Pécsi (ed.):* A Dunántúli dombság (Dél-Dunántúl) [The Transdanubian Hill-Country. /Southern Transdanubia/]. Budapest 1981.

Perlès (1979) *C. Perlès:* Des navigateurs mediterranéens il y a 10000 ans. La Recherche 10/96 (1979) 82–83.

Perlès (1987) *C. Perlès:* Les industries du néolithique "précéramique" de Grèce: nouvelles études, nouvelles interpretations. In: J. K. Kozłowski – St. K. Kozłowski (eds.): Chipped Stone Industries of the Early Farming Cultures in Europe. Warszawa 1987: 19–39.

Perlès (1989) *C. Perlès:* La néolithisation de la Grèce. In: A. Aurenche – J. Cauvin (eds): Néolithisations. Proche et Moyen Orient, Méditerranée Orientale, Nord de l'Afrique, Europe Méridionale, Chine, Amérique de Sud. BAR IntSer 516. Oxford 1989.

Perlès (1990) *C. Perlès:* Franchthi V. Bloomington, Ind. 1990.

Perlès (1993) *C. Perlès:* Les début du néolithique en Grèce. La Recherche 266 (1993) 642–650.

Perlès (1999) *C. Perlès:* Long-term perspectives on the occupation of the Franchthi cave: continuity and discontinuity. In: G. Bailey – E. Adam – E. Panagopoulou – C. Perlès – K. Zachos (eds): The Palaeolithic Archaeology of Greece and its Adjacent Areas. BSA Studies 3. London 1999: 311–318.

Perlès (2001) *C. Perlès:* The Early Neolithic in Greece. The first farming communities. Cambridge world archaeology. Cambridge, etc. 2001.

Perničeva (1990) *L. Perničeva:* Le site de Kovačevo, Neolithique ancien, dans le department de Blagoevgrad. SP 10 (1990) 142–196.

Perničeva (1995) *L. Perničeva:* Prehistoric cultures in the Middle Struma valley: Neolithic and Eneolithic. In: D. W. Bailey – I. Panayotov (eds): Prehistoric Bulgaria. Madison, Wis. 1995: 99–140.

Petrasch (1984) *J. Petrasch:* Typologie und Funktion neolithischer Öfen in Mittel- und Südosteuropa. Magisterhausarbeit. Tübingen 1984.

Petrasch (1990) *J. Petrasch:* Mittelneolithische Kreisgrabenanlagen in Mitteleuropa. BRGK 71 (1990) 407–564.

Petrasch (2001) *J. Petrasch:* "Seid fruchtbar und mehret euch und füllet die Erde und machet sie euch untertan": Überlegungen zur demographischen Situation der bandkeramischen Landnahme. AKorr 31 (2001) 13–25.

Petrović (1976) *J. Petrović:* Golokut–Vizić, praistorijsko naselje. AP 18 (1976) 11–22.

Petrović (1986–87) *J. Petrović:* Zemunica u naselju starčevačke kulture na Golokutu (Erdhütten in der Siedlung der Starčevačkaer Kultur auf Golokut). RVM 30 (1986–87) 13–28.

Petrović (1990) *J. Petrović:* A contribution to the study of autonomous predecessors of the Vinča culture in Srem. In: D. Srejović – N. Tasić (eds): Vinča and its World. Belgrade 1990: 85–89.

Pinhasi – Foley – Mirazón Lahr (2000) *R. Pinhasi – R. A. Foley – M. Mirazón Lahr:* Spatial and temporal patterns in the Mesolithic–Neolithic archaeological record. In: C. Renfrew – K. Boyle (eds): Archaeogenetics: DNA and the population history of Europe. McDonalds Institute monographs. Oxford 2000: 45–56.

Price (1985) *T. D. Price:* Complex foragers in Southern Skandinavia. In: T. D. Price – J. A. Brown (eds): Prehistoric Hunter-Gatherers: the emergence of cultural complexity. London 1985: 341–364.

Price (1987) *T. D. Price:* The Mesolithic of Western Europe. JWP 1 (1987) 225–305.

Price (1989) *T. D. Price:* The reconstruction of mesolithic diets. In: C. Bonsall (ed.): The Mesolithic in Europe: Proceedings of the Third International Symposium. Edinburgh 1989: 48–59.

Price (1999) *T. D. Price:* Human population in Europe during the Mesolithic. In: E. Cziesla – Th. Kersting – St. Pratsch (eds): Den Bogen spannen... Festschrift für Bernhard Gramsch zum 65. Geburtstag. Beiträge zur Ur- und Frühgeschichte Mitteleuropas 20. Weissbach 1999: 185–195.

Price (2000) *T. D. Price:* Europe's first farmers: an introduction. In: T. D. Price (ed.): Europe's First Farmers. Cambridge 2000: 1–18.

Price – Brown (1985) *T. D. Price – J. A. Brown:* Aspects of hunter-gatherer complexity. In: T. D. Price – J. A. Brown (eds): Prehistoric Hunters-Gatherers. The emergence of social complexity. London 1985: 3–20.

Price et al. (1995) *T. D. Price – A.-B. Gebauer – L. H. Keeley:* The spread of farming into Europe North of the Alps. In: T. D. Price – A.-B. Gebauer (eds): Last Hunters, First Farmers. School of America Research, Advanced Seminar series. Santa Fe 1995: 95–126.

Price et al. (2001) *T. D. Price – R. A. Bentley – J. Lüning – D. Gronenborn – J. Wahl:* Prehistoric human migration in the Linearbandkeramik of Central Europe. Antiquity 75 (2001) 593–603.

Pucher (2002[2001]) *E. Pucher:* Tierknochen. Viehvirtschaft und Jagd zur Zeit der ältesten Linearbandkeramik von Neckenmarkt (Burgenland) und Strögen (Niederösterreich). Anmerkungen zu den linearbandkeramischen Tierknochenfunden aus Neckenmarkt und Strögen aus aktueller Licht. In: E. Lenneis – J. Lüning: Die altbandkeramischen Siedlungen von Neckenmarkt und Strögen. UPA 82. Bonn 2001: 258–270.

Pusztai (1957) *R. Pusztai:* Mezolitikus leletek Somogyból (Mesolithische Funde im Komitat Somogy). JPMÉ 1957: 95–105.

Pyke (1996) *G. Pyke:* Stratigraphy. Structures and architecture. In: R. J. Rodden – G. Pyke – P. Yiouni – K. A. Wardle.: Nea Nikomedeia I: The excavation of an early neolithic village in Northern Greece 1961–1964. The excavation and the ceramic assemblage. BSA Suppl. 25. Oxford – Northampton 1996: 9–53.

Quitta (1960) *H. Quitta:* Zur Frage der ältesten Bandkeramik in Mitteleuropa. PZ 38 (1960) 153–188.

Quitta (1962) *H. Quitta:* Zur ältesten Bandkeramik in Mitteleropa. In: K.-H. Otto (ed.): Aus Ur- und Frühgeschichte. Berlin 1962: 87–107.

Quitta (1971) *H. Quitta:* Der Balkan als Mittler zwischen Vorderem Orient und Europa. In: F. Schlette (ed.): Evolution und Revolution im Alten Orient und im Europa. Das Neolithikum als historische Erscheinung. Berlin 1971: 38–63.

Raczky (1976) *P. Raczky:* A Körös-kultúra leletei Tiszajenőn (Funde der Körös-Kultur in Tiszajenő). ArchÉrt 103 (1976) 171–189.

Raczky (1977) *P. Raczky:* Szajol-Felsőföld [excavation report]. ArchÉrt 104 (1977) 263.

Raczky (1979–80) *P. Raczky:* A Körös-kultúra újabb figurális ábrázolásai a Közép-Tiszavidékről és történeti összefüggéseik (New figural representations of the Körös culture from the Middle Tisza region and their historical connections). SzMMÉ 1979–80: 5–37.

Raczky (1982–83) *P. Raczky:* Origins of the custom of burying the dead inside houses in South East Europe. SzMMÉ 1982–83: 5–10.

Raczky (1983) *P. Raczky:* A korai neolitikumból a középső neolitikumba való átmenet kérdései a Közép- és Felső-Tiszavidéken (Questions of transition between the Early and Middle Neolithic in the Middle and Upper Tisza region). ArchÉrt 110 (1983) 161–194.

Raczky (1986) *P. Raczky:* Megjegyzések az „alföldi vonaldíszes kerámia" kialakulásának kérdéséhez [Remarks on the question of the formulation of the "Alföld Linear Pottery" culture]. In: P. Németh (ed.): Régészeti tanulmányok Kelet-Magyarországról [Magyarországról [Archaeological studies on Eastern Hungary]. Folklór és etnográfia 24. Debrecen 1986: 45–59.

Raczky (1988) *P. Raczky:* A Tiszavidék kulturális és kronológiai kapcsolatai a Balkánnal és az Égeikummal a neolitikum, rézkor időszakában. Újabb kutatási eredmények és problémák [The cultural and chronological connections of the Tisza region with the Balkan and Aegean at the time of the Neolithic and Chalcolithic. Recent research results and problems]. Szolnok 1988.

Raczky et al. (1994) *P. Raczky – W. Meier-Arendt – K. Kurucz – Zs. Hajdú – Á. Szikora:* A late neolithic settlement in the Upper Tisza region and its cultural connections (Preliminary report). JAMÉ 36 (1994) 231–240.

Raczky et al. (1997) *P. Raczky – A. Anders – E. Nagy – K. Kurucz – Zs. Hajdú – W. Meier-Arendt:* Polgár-Csőszhalom-dűlő. In: *Raczky – Kovács – Anders (eds) (1997)* 34–43.

Raczky – Kovács – Anders (1997) *P. Raczky – T. Kovács – A. Anders (eds):* Utak a múltba. Az M3-as autópálya régészeti leletmentései = Paths into the Past. Rescue excavations on the M3 Motorway. Budapest 1997.

Radó (1974) *S. Radó (ed.):* A Dél-Dunántúl atlasza [Atlas of Southern Transdanubia]. Budapest 1974.

Radovanović (1992–93[1994]) *I. Radovanović:* A review of formal disposal areas in the Mesolithic of Europe. Starinar 43–44 (1992–93) 93–102.

Radovanović (1996) *I. Radovanović:* Mesolithic/neolithic contacts: a case of the Iron Gates region. Poročilo 23 (1996) 39–48.

Radovanović (2000) *I. Radovanović:* Houses and burials at Lepenski Vir. EJA 3/3 (2000) 330–349.

Radovanović – Voytek (1997) *I. Radovanović – B. Voytek:* Hunters, Fishers and Farmers: sedentism, subsistence and social complexity in the Djerdap Mesolithic. APL 29. Leiden 1997: 19–31.

Raduncheva (1976) *A. Raduncheva:* Prehistoric Art in Bulgaria from the Fifth to the Second Millennium. BAR IntSer 13. Oxford 1976.

Rakonczay (1996) *Z. Rakonczay (ed.):* A Szigetköztől az Őrségig. A Nyugat-Dunántúl védett természeti értékei [From Szigetköz to the Őrség. (Areas under environmental protection in Western Transdanubia]. Budapest 1996.

Rähle (1978) *W. Rähle:* Schmuckschnecken aus mesolithischen Kulturschichten Süddeutschlands und ihre Herkunft (Probstfeld, Frankensteinhöhle, Burghöhle

Dietfurt, Zigeunerfels, Grosse Ofnet). In: W. Taute (ed.): Das Mesolithikum in Süddeutschland 2. Naturwissenschaftliche Untersuchungen. Tübingen 1978: 163–168.

Regenye (1991) *J. Regenye:* Neolitikus leletek Mencshely környékéről (Neolithische Funde aus der Umgebung von Mencshely). TapolcaVMK 2 (1991) 31–47.

Regenye (2002) *J. Regenye:* Transdanubian Linear Pottery culture in Balatonalmádi–Vörösberény. In: E. Bánffy (ed.): Prehistoric Studies. In memoriam I. Bognár-Kutzián. Antaeus 25 (2002) 221–236.

Reinecke (1982) *K. Reinecke:* Linearbandkeramische Siedlungen in Niederbayern. In: J. Pavúk (ed.): Siedlungen mit Linearkeramik in Europa. Internationales Kolloquium Malé Vozokaný. Nitra 1982: 239–246.

Reinecke (1983) *K. Reinecke:* Zwei Siedlungen der ältesten Linienbandkeramik aus dem Isartal. BVbl 48 (1983) 31–62.

Renfrew (1969) *C. Renfrew:* The autonomy of the South east European Copper Age. PPS 35 (1969) 12–47.

Renfrew (1970) *C. Renfrew:* The evidence of Sitagroi. PPS 36 (1970) 295–311.

Renfrew (1972) *C. Renfrew:* The Emergence of Civilisation: The Cyclades and the Aegean in the 3rd Millennium. London 1972.

Renfrew (1985) *C. Renfrew:* The Archaeology of Mind. Cambridge 1985.

Renfrew (1987) *C. Renfrew:* Archaeology and Language: the puzzle of Indo-European origins. London 1987.

Renfrew (1993) *C. Renfrew:* Cognitive Archaeology: some thoughts on the archaeology of thought. Cambridge Arch. Jornal 3 (1993) 248–250

Renfrew (2000a) *C. Renfrew:* At the edge of knowability: towards a prehistory of languages. Cambridge Archaeological Journal 10 (2000) 7–34.

Renfrew (2000b) *C. Renfrew:* Archaeogenetics: towards a population prehistory of Europe. In: C. Renfrew – K. Boyle (eds): Archaeogenetics: DNA and the population history of Europe. McDonalds Institute monographs. Oxford 2000: 3–11.

Renfrew – Zubrow (1994) *C. Renfrew – E. B. W. Zubrow (eds):* The Ancient Mind. Elements of cognitive archaeology. Cambridge 1994.

Renfrew (1973) *J. Renfrew:* Agriculture. In: D. Theokharis (ed.): Neolithic Greece. Athens 1973: 147–164.

Richards (2002) *M. R. Richards:* Paleodietary analysis. In: *Whittle et al. (2002)* 75–78.

Richards et al. (1996) *M. R. Richards – H. Corte-Real – P. Forster – V. Macauley – H. Wilkinson-Herbots – A. Demaine – S. Papiha – R. Hedges – H.-J. Bandet – B. Sykes:* Palaeolithic and neolithic lineages in the European mitochondrial gene pool. American Journal of Human Genetics 59 (1996) 185–203.

Ridley – Wardle (1979) *C. Ridley – K. Wardle:* Rescue excavations at Servia 1971–1973 A preliminary report. BSA 74 (1979) 185–230.

Rodden – Pyke – Yiouni – Wardle (1996) *R. J. Rodden – G. Pyke – P. Yiouni – K. A. Wardle:* Nea Nikomedeia I: The excavation of an early neolithic village in Northern Greece 1961–1964. The excavation and the ceramic assemblage. BSA Suppl. 25. Oxford – Northampton 1996.

Roksandić (2000) *M. Roksandić:* Between foragers and farmers in the Iron Gates Gorge: Physical anthropology perspective Djerdap population in transition from Mesolithic to Neolithic. DocPraehist 27 (2000) 91–100.

Roksandić (2001) *M. Roksandić:* Where and how of possible migrations in the Iron Gate Gorges. In: M. Otte (ed.): UISPP Conference handbook, Liège, Sept, 2001. Séction mésolithique. Liège 2001: 187.

Rollefson (1983) *G. O. Rollefson:* Ritual and ceremony in Neolithic Ain Ghazal (Jordan). Paléorient 9 (1983) 29–38.

Roman – Păunescu (1996) *P. Roman – A. Păunescu:* Ostrovul Corbului I. (P. Roman: Forschungsgeschichte. Ausgrabungen und Stratigraphie; A. Păunescu: Die mesolithische Siedlung der Schela Cladovei-Kultur). Eds: H. Hauptmann – P. Roman.) Bukarest 1996.

Roodenberg (1993) *J. Roodenberg:* Ilipinar X to VI: links to chronology. Anatolica 19 (1993) 251–261.

Roodenberg (1995) *J. Roodenberg:* The Ilipinar excavations I. Five seasons of fieldwork in NW Anatolia 1987–91. Nederlands Historisch-Archaeologisch Instituut. Istanbul 1995.

Roodenberg (2000) *J. Roodenberg:* Early village development at Ilipinar, NW-Anatolia. In: St. Hiller – V. Nikolov (eds): Karanovo III: Beiträge zum Neolithikum in Südosteuropa. Wien 2000: 185–191.

Rosenberg (1999) *M. Rosenberg:* Hallan Çemi. In: M. Özdoğan – N. Başgelen (eds): Neolithic in Turkey. The cradle of civilization. New discoveries. Istanbul 1999: 25–33.

Rosenberg – Davis (1992) *M. Rosenberg – M. K. Davis:* Hallan Çemi Tepesi, an early aceramic neolithic site in Eastern Anatolia: some preliminary observations concerning material culture. Anatolica 18 (1992) 1–18.

Roska (1941) *M. Roska:* A Torma Zsófia-gyűjtemény (Die Sammlung Zsófia von Torma). Kolozsvár 1941.

Rowley-Conwy (1983) *P. Rowley-Conwy:* Sedentary hunters: the Ertebolle example. In: G. Bailey (ed.): Hunter-Gatherer Economy. Cambridge 1983: 111–126.

Rowley-Conwy (1986) *P. Rowley-Conwy:* Between the painters and crop planters: aspects of the temperate European Mesolithic. In: M. Zvelebil (ed.): Hunters in Transition. Cambridge 1986: 17–32.

Rowley-Conwy – Zvelebil (1989) *P. Rowley-Conwy – M. Zvelebil:* Saving it for later: storage by prehistoric hunter-gatherers in Europe. In: P. Halstead – J. O'Shea (eds): Bad Year Economics. Cambridge 1989: 40–56.

Rozoy (1996) *J. G. Rozoy:* Kopemetalka i luk doistoričeskih ohotnikov. Tehnika i sravnitelnaja demografia (Spearthrower and bow of the pre-historical hunters, Techniques and comparative demography). RossArh 1996/2: 5–20.

Růlf (1982) *I. Růlf:* Die Linearbandkeramik in Böhmen und die geographische Umwelt. In: J. Pavúk (ed.): Siedlungen der Kultur mit Linearkeramik in Europa. Internationales Kolloquium Malé Vozokaný. Nitra 1982: 247–259.

Runnels (2001) *C. Runnels:* The stone age of Greece from the Palaeolithic to the advent of Neolithic. In: T. Cullen (ed.): Aegean Prehistory. A review. Boston 2001: 225–258.

Runnels – van Andel (1987) *C. Runnels – T. van Andel:* The evolution of settlement in the Southern Argolid, Greece. Hesperia 56 (1987) 303–334.

Runnels – van Andel (1988) *C. Runnels – T. van Andel:* Trade and the origins of agriculture in the Eastern Mediterranean. Journal of Mediterranen Archaeology 1 (1988) 83–109.

Ruttkay (1983) *E. Ruttkay:* Das Neolithikum in Niederösterreich. FUFG 12. Wien 1983.

Ruttkay – Wessely – Wolff (1976) *E. Ruttkay – G. Wessely – P. Wolff:* Eine Kulturschicht der ältesten Linearbandkeramik in Prellenkirchen, p. B. Bruck, Niederösterreich. Ein Beitrag zur Frage der Entstehung der Linearbandkeramik. ANhM 80 (1976) 843–861.

Ryan – Pitman et al. (1997) *W. B. F. Ryan – W. C. Pitman – C. O. Major – K. Shimkus – V. Moskalenko – G. A. Jones – P. Dimitrov – N. Gorür – M. Sakinc – H. Yüce:* An abrupt drowning of the Black Sea shelf. Marine Geology 138 (1997) 119–126.

Sági – Füzes (1973) *K. Sági – M. Füzes:* Újabb adatok a Balaton 1863 előtti vízállás tendenciáinak kérdéséhez (Neue Angaben zur Frage der Tendenz des Wasserstandes vor 1863 im Plattensee). SMK 1 (1973) 247–261.

Sági – Törőcsik (1989) *K. Sági – Z. Törőcsik:* A Dunántúli Vonaldíszes Kerámia "Tapolcai csoportja" (The "Tapolca group" of the Transdanubian Linear Pottery culture). TapolcaVMK 1 (1989) 29–72.

Sági – Törőcsik (1991) *K. Sági – Z. Törőcsik:* A Dunántúli Vonaldíszes kerámia kultúrája "Tapolcai csoportjának" Balaton környéki lelőhelyei. Fundorte der zur Kultur der Transdanubischen Linienbandkeramik gehörenden "Tapolca-Gruppe" in der Balatongegend. Bibliotheca Musei Tapolcensis 1. Tapolca 1991.

Sahlins (1972) *M. Sahlins:* Stone Age Economics. Chicago 1972.

Saidel (1993) *B. A. Saidel:* Round house or square? Architectural form and socioeconomic organisation in the PPNB. Journal of Mediterranean Archaeology 6/1 (1993) 65–108.

Saile (2001) *Th. Saile: Salz im Ur- und frühgeschichtlichen Mitteleuropa – Eine Bestandaufnahme. BRGK 81, 2000 (2001) 129-234*

Sampson – Kozłowski – Kaczanowska (1998) *A. Sampson – J. K. Kozłowski – M. Kaczanowska:* Entre l'Anatolie et les Balkans: Une séquence mésolithique-néolithique de l'ile de Gioura (Sporades du Nord). In: M. Otte (ed.): Préhistoire d'Anatolie. Genèse de deux mondes I. ERAUL 85. Liège 1998: 125–141.

Schade (1999a) *Chr. Schade:* Landschaftsarchäologie in der Mörlener Bucht: Zentralität und Rohstoff-Vorkommen – ein bandkeramischer Zentralort mit Nebensiedlungen in der Gemarkung von Butzbach–Feuerbach v. d. H. Berichte der Kommission für Archäologische Landesforschung in Hessen 6 (1999) 9–30.

Schade (1999b) *Chr. Schade:* Besiedlungsgeschichte der Bandkeramik in der Mörlener Bucht/Wetterau (BBM). Zentralität und Peripherie, Haupt- und Nebenorte, Siedlungsverbände. PhD Dissertation, Frankfurt/Main (Theses). Arch. Nachr.Bl. 7 (1999) 325–329.

Schade-Lindig (2002a) *S. Schade-Lindig:* Idole und sonderbar verfüllte Gruben aus der bandkeramischen Siedlung "Hempler" in Bad Nauheim–Niedermörlen. In: H.-J. Beier (ed.): Varia Neolithica II: Beiträge zur Ur- und Frühgeschichte Mitteleuropas 32. Weissbach 2002: 99–115.

Schade-Lindig (2002b) *S. Schade-Lindig:* Idol- und Sonderfunde der bandkeramischen Siedlung von Bad Nauheim–Niedermörlen "Auf dem Hempler" (Wetteraukreis). Germania 80 (2002) 47–114.

Schäfer (1999) *M. Schäfer:* Untersuchungen zur mesolithischen Begehung in Tirol. In: Ph. Della Casa (ed.): Prehistoric Alpine Environment, Society and Economy. UPA 55. Bonn 1999: 37–46.

Schier (1995) *W. Schier:* Vinča-Studien. Tradition und Innovation im Spätneolithikum des zentralen Balkanraumes am Beispiel der Gefässkeramik aus Vinča-Belo Brdo. Habilitation thesis, University of Heidelberg 1995.

Schier (1996) *W. Schier:* The relative and absolute chronology of Vinča: new evidence from the type site. In: F. Draşovean (ed.): The Vinča Culture, its Role and Cultural Connections. Timişoara 1996: 141–162.

Schier (1997) *W. Schier:* "Proto-Vinča": Zum Übergang von der Starčevo- zur Vinča-Kultur im Südosten des Karpatenbeckens. In: M. Lazić (ed.): Antidóron. Completis LXV annis Dragoslavo Srejović ab amicis collegis discipulis oblatum. Centre for Archaeological Reserch/University of Belgrade, Faculty of Philosophy 17. Belgrade 1997: 157–166.

Schier (2000) *W. Schier:* Vorgeschichtliche Besiedlung südliches Maindreieck. MhBV A 60. Nürnberg–München 2000.

Schlüter (1983) *B. Schlüter:* Die bandkeramische Siedlung auf dem Mühlengrund in Rosdorf, Ldkr. Göttingen. In: Frühe Bauernkulturen in Niedersachsen. Linienbandkeramik, Stichbandkeramik, Rössener Kultur. Archäologische Mitteilungen aus Nordwestdeutschland 1. Oldenburg 1983: 45–90.

Schmidgen-Hager (1993) *E. Schmidgen-Hager:* Bandkeramik im Moseltal. UPA 18. Bonn 1993.

Schmidt (2000) *K. Schmidt:* Göbekli Tepe, Southeastern Turkey. A preliminary report on the 1995–1999 excavations. Paléorient 26/1 (2000) 45–55.

Schubert (1999) *H. Schubert:* Die bemalte Keramik des Frühneolithikums in Südosteuropa, Italien und Westanatolien. Internationale Archäologie 47. Rahden/Westfalen 1999.

Schwitalla (1996) *G. M. Schwitalla:* Zur Entwicklung der jungsteinzeitlichen Siedlungsstruktur im Voreifelgebiet. UPA 31. Bonn 1996.

Schwitalla (1999) *G. Schwitalla:* Die Europäische Union des 6. Jahrtausends. Die linearbandkeramische Zentralsiedlung von Nieder-Mörlen. In: 25 Jahre Denkmalpflege in Hessen. Wiesbaden 1999: 28–29.

Selmeczi (1969) *L. Selmeczi:* Das Wohnhaus der Körös-Gruppe von Tiszajenő. Neuere Angaben zu den Haustypen des Frühneolithikums. MFMÉ 1969/2 17–22.

Semino et al. (1996) *O. Semino – A. Brega – M. Fellows – A. S. Santachiara-Benerechetti:* A view of the neolithic diffusion in Europe through two Y-chromosome-specific markers. American Journal of Human Genetics 59 (1996) 964–968.

Shanks – Tilley (1987) *M. Shanks – Chr. Tilley:* Social Theory and Archaeology. Cambridge 1987.

Sherratt (1982) *A. G. Sherratt:* Mobile resources: settlement and exchange in early agricultural Europe. In: C. Renfrew – S. Shennan (eds): Ranking, Resource and Exchange: Aspects of the archaeology of early European society. Cambridge 1982: 13–26.

Sherratt (1983) *A. G. Sherratt:* The development of neolithic and copper age settlement in the Great Hungarian Plain. Part II. Site survey and settlement dynamics. OJA 2 (1983) 13–41.

Simoska (1985) *D. Simoska:* Veluška Tumba, neolithic settlement. AP 1985: 48.

Simoska – Sanev (1975) *D. Simoska – V. Sanev:* Neolitska naselba Veluška Tumba kaj Bitola (The neolithic settlement Veluška Tumba at Bitola. A report on protecting excavations in 1971 and 1972) MacAA 1 (1975) 25–88.

Sims-Williams (1988) *P. Sims-Williams:* Genetics, linguistics and prehistory. Thinking big and thinking straight. Antiquity 71 (1988) 505–527.

Somogyi (1987) *S. Somogyi:* Relationships between environmental changes and human impact until the 9th century. In: M. Pécsi – L. Kordos (eds): Holocene Environment in Hungary. Ottawa – Budapest 1987: 25–36.

Soó et al. (1969) *R. Soó – A. Borhidi – M. Kovács – I. Csapody – T. Pócs:* Die Wälder und Wiesen West- und Südtransdanubien (Nyugat- és Délnyugat-Dunántúl erdei és rétjei). Acta Botanica Acad. Sc. Hung. 15/1 (1969) 137–165.

Soudský – Pavlů (1972) *B. Soudský – I. Pavlů:* The Linear pottery culture settlement patterns in Central Europe. In: P. Ucko – R. Tringham – G. W. Dimbleby (eds): Man, Settlement and Urbanism. London 1972: 317–328.

Srejović (1969) *D. Srejović:* The roots of the Lepenski Vir culture. AI 10 (1969) 13–22.

Srejović (1971) *D. Srejović:* Die Lepenski Vir-Kultur und der Beginn der Jungsteinzeit an der mittleren Donau. Fundamenta A3. Köln–Wien 1971: 1–19.

Srejović (1975) *D. Srejović:* Lepenski Vir. (Serbian edition: Beograd 1969) Bergisch Gladbach 1975.

Srejović (1979) *D. Srejović:* Protoneolit – kultura Lepenskog Vira. In: M. Garašanin (ed.): Praistorija jugoslavenskog zemalja II. Sarajevo 1979: 33–78.

Srejović (1988) *D. Srejović:* The Neolithic of Serbia: a review of research. In: D. Srejović (ed.): The Neolithic of Serbia. Novi Sad 1988: 5–19.

Srejović (1989) *D. Srejović:* The Mesolithic of Serbia and Montenegro. In: C. Bonsall (ed.): The Mesolithic in Europe. Edinburgh 1989: 481–491.

Srejović – Letica (1978) *D. Srejović – Z. Letica:* Vlasac: a mesolithic settlement in the Iron Gates. Beograd 1978.

Stadler (1995) *P. Stadler:* Ein Beitrag zur Absolutkronologie des Neolithikums aufgrund der 14C-Daten in Österreich. In: Jungsteinzeit im Osten Österreichs. St. Pölten 1995: 210-224.

Stadler (1999) *P. Stadler:* Die ältestlinearbandkeramische Fundstelle von Brunn am Gebirge, Flur Wolfholz (5620–5200 v. Chr.) Führer zur Austellung in Brunn im August 1999: 1–13.

Stadler online: www.nhm.wien.ac.at/NHM/Prehist/Stadler/Brunn/index.html

Stanković (1986) *S. Stanković:* Žrtvenici i prosopomorfni poklopci iz Vinče (Altars and prosopomorphic lids from Vinča). Beograd 1986.

Stanković (1989–90) *S. Stanković:* Bull representations in the Early Neolithic. Starinar N.S. 40–41 (1989–90) 35–42.

Starnini (1994) *E. Starnini:* Typological and technological analysis of the Körös culture stone assemblages of Méhtelek–Nádas and Tiszacsege (North East Hungary). A preliminary report. JAMÉ 36 (1994) 101–110.

Starnini (2000) *E. Starnini:* Stone industries of the early neolithic cultures in Hungary and their relationships with the mesolithic background. Quaderno/Società Preistoria Protoistoria Friuli-Venezia Giulia 8. Trieste 2000: 207–219.

Starnini (2001) *E. Starnini:* The Mesolithic/Neolithic transition in Hungary: the lithic perspective. In: R. Kertész – J. Makkay (eds): From the Mesolithic to the Neolithic. Proceedings of the International Archaeological Conference held in Szolnok 1996. Archaeolingua 11. Budapest 2001: 395–404.

Stäuble (1990) *H. Stäuble:* Die ältestbandkeramische Grabenanlage in Eitzum, Ldkr. Wolfenbüttel. Überlegungen zur Verfüllung und Interpretation von Befunden. JMV 73 (1990) 331–344.

Stäuble (1994) *H. Stäuble:* Häuser und absolute Datierung der ältesten Bandkeramik. PhD dissertation, University of Frankfurt/Main 1994.

Stäuble (1995) *H. Stäuble:* Radiocarbon dates of the Earliest Neolithic of central Europe. Radiocarbon 37/2 (1995) 227–237.

Stäuble (1997) *H. Stäuble:* Häuser, Gruben und Fundverteilung. In: J. Lüning (ed.): Ein Siedlungsplatz der ältesten Bandkeramik in Bruchenbrücken, Stadt Friedberg/Hessen. UPA 39. Bonn 1997: 17–150.

Stäuble (2001[2002]) *H. Stäuble:* Strögen. Die Häuser und Befunde. In: E. Lenneis – J. Lüning: Die altbandkeramischen Siedlungen von Neckenmarkt und Strögen. UPA 82. Bonn 2001: 425–439.

Stäuble – Lüning (1999) *H. Stäuble – J. Lüning:* Phosphatanalysen in bandkeramischen Häusern. AKorr 29 (1999) 169–187.

Steadman (2000) *Sh. R. Steadman:* Spatial patterning and social complexity on prehistoric Anatolian Tell sites: models for mounds. JAA 19 (2000) 164–199.

Stefanova (1998) *T. Stefanova:* On the problem of the Anatolian-Balkan relations during the Early Neolithic in Thrace. DocPraehist 25 (1998) 91–97.

Stehli (1989) *P. Stehli:* Merzbachtal. Umwelt und Geschichte einer bandkeramischen Siedlungskammer. Germania 67 (1989) 51–76.

Stehli (1994) *P. Stehli:* Chronologie der Bandkeramik im Merzbachtal. In: J. Lüning – P. Stehli (eds): Die Bandkeramik im Merzbachtal auf der Aldenhovener Platte. Rheinische Ausgrabungen 36. Köln 1994.

Stordeur – Brenet – Aprahamian – Roux (2000) *D. Stordeur – M. Brenet – G. Aprahamian – J.-R. Roux:* Les bâtiments communautaires de Jerf el Ahmar et Mureybet horizon PPNA (Syrie). Paléorient 26/1 (2000) 29–44.

Strien (2000) *H.-Chr. Strien:* Untersuchungen zur Bandkeramik in Württenberg. UPA 69. Bonn 2000.

Stuiver – Reimer (1993): M. Stuiver – P. Reimer: Extended 14C data base and revised CALIB 3.0 14C age calibration program. Radiocarbon 35: 215-230

Sümegi (2001) *P. Sümegi:* A környezetrégészet problémái Magyarországon (The problems of environmental archaeolgy in Hungary). In: Momos I. Debrecen 2001: 17–51.

Sümegi – Kertész (2001) *P. Sümegi – R. Kertész:* Palaeogeographic characteristics of the Carpathian Basin – an ecological trap during the Early Neolithic? In: R. Kertész – J. Makkay (eds): From the Mesolithic to the Neolithic. Proceedings of the International Archaeological Conference held in Szolnok 1996. Archaeolingua 11. Budapest 2001: 405–415.

Sümegi – Kertész – Hertelendi (2002) *P. Sümegi – R. Kertész – E. Hertelendi:* Environmental change and human adaptation in the Carpathian Basin at the Late Glacial/ Postglacial transition. In: E. Jerem – K. T. Biró (eds): Archaeometry 98. Proceedings of the 31st symposium Budapest, April 26–May 3 1998. Archaeolingua Central European Series 1 = BAR IntSer 1043. Oxford 2002: 171–177.

Sümegi – Krolopp – Rudner (2002) *P. Sümegi – E. Krolopp – E. Rudner:* Negyedidőszak végi őskörnyezeti változások a Kárpát-medencében térben és időben (Late quaternary environmental changes in the Carpathian Basin in space and time). FtK 132/Különszám (Special issue) (2002) 5–22.

Sykes (2000) — *B. Sykes:* Human diversity in Europe and beyond: from blood groups to genes. In: C. Renfrew – K. Boyle (eds): Archaeogenetics: DNA and the population of Europe. McDonald Institute monographs. Cambridge 2000: 23–28.

Sykes (2001) — *B. Sykes:* The seven daughters of Eve. London 2001.

Szekeres (1967) — *L. Szekeres:* Ludas–Budžak, ranoneolitsko naselje. AP 9 (1967) 9–13.

Szekeres (1986) — *L. Szekeres:* Kanizsa múltja a régészeti leletek fényében [The past of Kanizsa in the light of archaeological finds]. Kanizsa monográfiája = Monografija Kanjiže. Kanjiža 1986.

Szőke (1996) — *B. M. Szőke:* Borderland of cultures. Settlement patterns in the Hahót Basin (Aims, methods, results). In: B. M. Szőke (ed.): Archaeology and Settlement History in the Hahót Basin, South West Hungary. Antaeus 22 (1996) 13–34.

Talalay (1983) — *L. E. Talalay:* Neolithic Figurines of Southern Greece: their form and function. PhD dissertation, Indiana University 1983.

Talalay (1987) — *L. E. Talalay:* Rethinking the function of clay figurine legs from Neolithic Greece. An argument by analogy. AJA 91 (1987) 161–169.

Tasić (1973) — *N(ikola) Tasić:* Neolitska plastika. Belgrade 1973.

Tasić – Tomić (1969) — *N(ikola) Tasić – E. Tomić:* Crnokalačka Bara. Naselje Starčevačke i Vinčanske kulture. Kruševac–Beograd 1969.

Tasić (2000) — *N(enad) Tasić:* Salt use in the Early and Middle Neolithic of the Balkan Peninsula. In: L. Nikolova (ed.): Technology, Style and Society. Contributions to the innovations between the Alps and the Black Sea in prehistory. BAR IntSer 854. Oxford 2000: 35–40.

Taute (1974) — *W. Taute:* Neue Forschungen zur Chronologie von Spätpaläolithikum und Mesolithikum in Süddeutschland. AInf 2–3 (1973–74) 71–124.

Taute (1980) — *W. Taute:* Das Mesolithikum in Süddeutschland 2: Naturwissenschaftliche Untersuchungen. Tübinger Monogr. zur Urgesch. 5/2. Tübingen 1980.

T. Biró (1987) — *K. T. Biró:* Chipped stone industry of the Linearband Pottery culture in Hungary. In: J. K. Kozłowski – St. Kozłowski (eds): Chipped Stone Industries of the Early Farming Cultures in Europe. Arch. Interregionalis. Warszawa 1987: 131–168.

T. Biró (1988) — *K. T. Biró:* Distribution of lithic raw materials on prehistoric sites. ActaArchHung 40 (1988) 251–274.

T. Biró (1991) — *K. T. Biró:* Mencshely–Murvagödrök kőanyaga (The lithic assemblage from Mencshely–Murvagödrök). TapolcaVMK 2 (991) 51–60.

T. Biró (1998) — *K. T. Biró* in: N. Kalicz – Zs. M. Virág – K. T. Biró: The northern periphery of the early neolithic Starčevo culture in south-western Hungary: a case study of an excavation at Lake Balaton. DocPraehist (Poročilo…) 25 (1998) 151–187.

T. Biró (2001a) — *K. T. Biró:* Lithic materials from the Early Neolithic in Hungary. In: R. Kertész – J. Makkay (eds): From the Mesolithic to the Neolithic. Proceedings of the International Archaeological Conference held in Szolnok 1996. Archaeolingua 11. Budapest 2001: 89–100.

T. Biró (2001b) — *K. T. Biró:* The "ham" of Bagódomb. In: F. Drașovean (ed.): Festschrift für Gheorghe Lazarovici. Timişoara 2001: 91–122.

T. Biró (2002a) — *K. T. Biró:* Balatonalmádi–Vörösberény – Lithic material in the Transdanubian LBC site. In: E. Bánffy (ed.): Prehistoric Studies. In memoriam I. Bognár-Kutzián. Antaeus 25 (2002) 119–168.

T. Biró (2002b) *K. T. Biró:* Advances in the study of early neolithic lithic materials in Hungary. In: E. Bánffy (ed.): Prehistoric Studies. In memoriam I. Bognár-Kutzián. Antaeus 25 (2002) 237–241.

T. Biró – H. Simon (2003) *K. T. Biró – K. H. Simon:* Lithic material of the Starčevo culture at Gellénháza–Városrét. In: In: E. Jerem – P. Raczky (eds): Morgenrot der Kulturen. Frühe Etappen der Menschheitsgeschichte in Mittel- und Südosteuropa. Festschrift für N. Kalicz für 75. Geburtstag. Archaeolingua 2003 115–126.

T. Biró (in press, 2004) *K. T. Biró:* The lithic finds from Szentgyörgyvölgy–Pityerdomb. In: E. Bánffy (ed.): Archaeology and Settlement History of the Kerka Valley – SW-Hungary. Antaeus 28.

T. Dobosi (1972) *V. T. Dobosi:* Mesolithische Fundorte in Ungarn = Mezolithikus lelőhelyek Magyarországon. In: J. Fitz (ed.): Aktuelle Fragen der Bandkeramik. Székesfehérvár 1972: 39–60.

Telegin (1987) *D. Telegin:* Neolithic cultures of the Ukraine and adjacent areas and their chronology. JWP 1 (1987) 307–331.

Tellenbach (1983) *M. Tellenbach:* Materialien zum präkeramischen Neolithikum in Südost-Europa. Typologisch-stratigraphischen Untersuchungen zu lithischen Gerätschaften. BRGK 64 (1983) 23–138.

Težak-Gregl (1993) *T. Težak-Gregl:* The Linear Pottery Culture in Central Croatia. The Korenovo culture. Zagreb 1993.

Theokharis (1967) *D. Theokharis:* I augi tis Thessalikis proistorias. (The Dawn of Thessalian Prehistory). Volos 1967.

Theokharis (1969) *D. Theokharis:* The prehistoric foundations of the Greek civilisation. AAA 2 (1969) 131–277.

Theokharis (1973) *D. Theokharis:* The neolithic civilisation. A brief survey. In: D. Theokharis (ed.): Neolithic Greece. Athens 1973: 17–128.

Theokharis (1981) *D. R. Theokharis:* Neolithikos politismos. Athina 1981.

Thissen (1999) *L. Thissen:* Trajectories towards te neolithisation of NW Turkey. DocPraehist 26 (1999) 29–39.

Thissen (2000a) *L. Thissen:* Early Village Communities in Anatolia and the Balkans, 6500–5500 cal BC. Studies in chronology and culture context. PhD Dissertation, University of Leiden 2000.

Thissen (2000b) *L. Thissen:* A chronological framework for the neolithisation of the Southern Balkans. In: St. Hiller – V. Nikolov (eds): Karanovo III: Beiträge zum Neolithikum in Südosteuropa. Wien 2000: 193–212.

Thissen (2000c) *L. Thissen:* Thessaly, Franchthi and Western Turkey: clues to the neolithisation of Greece? DocPraehist 27 (2000) 141–154.

Thorpe (1996) *I. Thorpe:* The Origins of Agriculture in Europe. London 1996.

Tichý (1958a) *R. Tichý:* Die Siedlung mit Volutkeramik bei Mohelnice na Mor., Bez. Zabrek. PV 1957 (1958) 15–18.

Tichý (1958b) *R. Tichý:* Anthropomorfe Gefäße aus Mohelnice n. Mor., und andere Bemerkungen zur Volutenkeramik. PA 49 (1958) 1–14.

Tichý (1960) *R. Tichý:* Zur ältesten Volutenkeramik in Mähren. PA 51 (1960) 415–441.

Tichý (1962) *R. Tichý:* Ošidleni s volutovou keramikou na Moravé = Die Besiedlung mit Voluten (Linearband)Keramik in Mähren. PA 53 (1962) 245–305.

Tichý (1972) *R. Tichý:* XIII. Grabungssaison in Mohelnice. PV 71 (1972) 17–21.
Tichý (1998) *R. Tichý:* The context of the early LBK-well at Mohelnice. In: H. Koschik (ed.): Brunnen in der Jungsteinzeit. Internationaler Symposium in Erkelenz. Köln 1998: 45–50.
Tilley (1991) *Chr. Tilley:* Material Culture and Text: the art of ambiguity. London 1991.
Tilley (1994) *Chr. Tilley:* A Phenomenology of Landscape. Oxford 1994.
Tillmann (1993a) *A. Tillmann:* Ein Rastplatz des frühen Mesolithikums bei Kemnath. AJB 1992. Stuttgart 1993: 31–33.
Tillmann (1993b) *A. Tillmann:* Kontinuität oder Diskontinuität? Zur Frage einer bandkeramischen Landnahme im südlichen Mitteleuropa. AInf 16 (1993) 157–187.
Todorova (1989) *H. Todorova:* Das Frühneolithikum Nordbulgariens im Kontext des ostbalkanischen Neolithikums. In: St. Hiller (ed.): Tell Karanovo und das Balkan-Neolithikum. Salzburg 1989: 9–25.
Todorova (1992) *H. Todorova:* Die westliche Schwarzmeerküste in der Urgeschichte (Stand der Forschung 1988). SP 11–12 (1992) 5–9.
Todorova (2002) *H. Todorova:* Durankulak II: Das prähistorische Gräberfeld 1–2. Berlin 2002.
Todorova – Vajsov (1993) *H. Todorova – I. Vajsov:* Novokamennata epoha v Bulgaria. Sofia 1993.
Tomić (1988) *E. Tomić:* Vitkovacko polje, Aleksandrovac. In: D. Srejović (ed.): The Neolithic of Serbia. Belgrade 1988: 105–106.
Tompa (1937[1934–35]) *F. Tompa:* 25 Jahre Urgeschichteforschung in Ungarn, 1912–1936. BRGK 24–25 (1934–35[1937]) 27–127.
Torma (1969) *I. Torma:* A Veszprém megyei régészeti topográfiai kutatások őskori vonatkozású eredményeiről (Über vorgeschichtliche Ergebnisse der archäologischen Topographie auf dem Gebiet des Komitats Veszprém). VMMK 8 (1969) 75–82.
Torma (1994) *I. Torma:* Veszprém megye az újkőkorban és a rézkorban (Településtörténeti vázlat) (Die neolithische und kupferzeitliche Besiedlung des Komitats Veszprém- Ungarn). VMMK 19–20 (1994) 63–68.
Torroni et al. (1998) *A. Torroni – H.-J. Bandelt – L. D'Urbano – P. Lahermo – P. Moral – D. Sellito – C. Rengo – P. Forster – M. L. Savontans – B. Bonné Tamir – R. Scozzari:* MtDNA analysis reveals a major palaeolithic population expansion from southwestern to northeastern Europe. American Journal of Human Genetics 62 (1998) 1137–52.
Toufexis (1994) *G. Toufexis:* Neolithic animal figures from Thessaly. In: J. C. Decourt – B. Hely – K. Gallis (eds): Thessalia – la Thessaly. Colloque international d'archéologie: 15 années de recherches (1975–1990). Athens 1994 163–168.
Toufexis (1996) *G. Toufexis:* Zoomorphic Figurines. In: G. A. Papathanassopoulos (ed.): Neolithic cultures in Greece. Athens 1996: 159–160.
Trajković (1988) *C. Trajković:* Topole –Bač. In: D. Srejović (ed.): The Neolithic of Serbia. Belgrade 1988: 99–101.
Trbuhović – Karmanski (1993) *V. Trbuhović – S. Karmanski:* Donja Branjevina 1989–1993. Odžaci 1993.
Treuil (1983) *R. Treuil:* Le Néolithique et le Bronze ancien égéens. Les problems stratigraphiques et chronologiques, les techniques, les hommes. Athen 1983.
Trigger (1989) *B. A. Trigger:* A History of Archaeological Thought. Cambridge 1989.

Trigger (1995) *B. A. Trigger:* Expanding middle-ranged theory. Antiquity 69 (1995) 449–458.

Tringham (1971) *R. Tringham:* Hunters, Fishers and Farmers of Eastern Europe 6000–3500 BC. London 1971.

Tringham (1973) *R. Tringham:* The Mesolithic of Southeastern Europe. In: St. K. Kozłowski (ed.): The Mesolithic in Europe. Warszawa 1973: 551–572.

Tringham (1991) *R. Tringham:* Household with faces: the challenge of gender in prehistoric architectural remains. In: M. Gero – M. Conkey: Engendering Archaeology: Women and prehistory. Oxford 1991: 93–131.

Tringham (2000) *R. Tringham:* Southeastern Europe in the transition to agriculture in Europe: bridge, buffer or mosaic. In: D. T. Price (ed.): Europe's First Farmers. Cambridge 2000: 19–56.

Tringham – Voytek (1989) *R. Tringham – B. Voytek:* Rethinking the Mesolithic: the case of South-East Europe. In: C. Bonsall (ed.): The Mesolithic in Europe. Edinburgh 1989: 80–88.

Trogmayer (1964) *O. Trogmayer:* Megjegyzések a Körös-csoport relatív időrendjéhez (Remarks on the relative chronology of the Körös group). ArchÉrt 91 (1964) 67–86.

Trogmayer (1966) *O. Trogmayer:* A Körös-csoport lakóházáról. Újkőkori házmodell-töredék Röszkéről (On the dwelling of the Körös group). ArchÉrt 93 (1966) 235–240.

Trogmayer (1966–67) *O. Trogmayer:* Bemerkungen zur Chronologie des Frühneolithikums auf dem Süd-Alföld. MFMÉ 1966–67: 35–40.

Trogmayer (1968) *O. Trogmayer:* A Körös-csoport barbotin kerámiájáról (The "barbotine" pottery of the Körös group). ArchÉrt 95 (1968) 6–12.

Tschernow (1995) *E. Tschernow:* Environmental and socioeconomic background to domestication in the Southern Levant. In: D. V. Campana (ed.): Before Farming: a hunter-gatherer society and subsistence. MASCA papers in Science and Archaeology, Supplement 12. Philadelphia 1995: 39–72.

Tzedakis (1993) *P. C. Tzedakis:* Long-term tree populations in Northwest Greece through multiple quaternary climatic science. Nature 364 (1993) 437–446.

Ucko (1968) *P. Ucko:* Anthropomorphic Figurines of Predynastic Egypt and Neolithic Crete with comparative material from the Prehistoric Near East and Mainland Greece. London 1968.

Ucko (1996) *P. J. Ucko:* Mother, are you there? In: Can we interpret figurines? Cambridge Archaeological Journal 6 (1996) 300–304.

Ursulescu (1984) *N. Ursulescu:* Evolutia culturii Starčevo-Criş pe teritoriul Moldovei. (Contributions a la connaissance de l'évolution et de la position chronologique de la civilisation Starčevo-Criş sur le territoire de la Moldavie). Suceava 1984.

Ursulescu (2001) *N. Ursulescu:* Local variants of the Starčevo-Criş culture in the Carpato-Nistrean area. In: F. Draşovean (ed.): Festschrift für Gh. Lazarovici. Timişoara 2001: 59–67.

van Andel – Runnels (1995) *T. H. van Andel – C. N. Runnels:* The earliest farmers in Europe. Antiquity 69 (1995) 481–500.

van Berg (1990) *P.-L. van Berg:* Céramique du Limbourg et le néolithisation en Europe du Nord-Ouest. In: D. Cahen – M. Otte (eds): Rubané et Cardial. Actes du Colloque de Liège 1988. ERAUL 39. Liège 1990: 161–208.

Vencl (1982) *S. Vencl:* Zur Frage des Bestehens eines präkeramischen Neolithikums in der Slowakei. AAC 10 (1982) 39–61.

Vencl (1983) *S. Vencl:* Zum Forschungstand des tschechoslowakischen Mesolithikums. PA 84 (1983) 148–151.

Vencl (1986) *S. Vencl:* The role of hunting-gathering populations in the transition to farming: a Central European perspective. In: M. Zvelebil (ed.): Hunters in Transition: Mesolithic societies of temperate Eurasia and their transition to farming. Cambridge 1986: 43–51.

Vigne – Desse-Berset (1995) *J.-L. Vigne – N. Desse-Berset:* The exploitation of animal resources in the Mediterranean Islands during the Pre-Neolithic: the example of Corsica. In: *Fischer (1995)* 309–318.

Vitelli (1993) *K. D. Vitelli:* Franchthi Neolithic Pottery, Vol II.: Classification and phases 1–2. Excavations at Franchthi Cave 9. Bloomington, Ind. 1993.

Vlassa (1966) *N. Vlassa:* Cultura Criş in Transilvania. ActaMN 3 (1966) 9–47.

Vlassa (1968) *N. Vlassa:* Sondajul de salvare de la Gura Baciului, com. Baciu, or. Cluj. ActaMN 5 (1968) 371–378.

Vlassa (1972a) *N. Vlassa:* Eine frühneolithische Kultur mit bemalter Keramik der Vor-Starčevo-Körös Zeit in Cluj–Gura Baciului, Siebenbürgen. PZ 47/2 (1972) 174–197.

Vlassa (1972b) *N. Vlassa:* Cea mai veche faza a complexului cultural Starčevo-Criş in Romania. ActaMN 9 (1972) 7–38.

Voytek – Tringham (1989) *B. Voytek – R. Tringham:* Rethinking the mesolithic: the case of South East Europe. In: C. Bonsall (ed.): Mesolithic in Europe. Edinburgh 1989: 492–499.

Vörös (1982) *I. Vörös:* Faunal remains from the Gravettian reindeer hunters' campsite at Ságvár (A ságvári gravetti rénszarvas vadásztábor faunája). FolArch 33 (1982) 13–41; 43–71.

Wace – Thompson (1912) *A. J. Wace – M. S. Thompson:* Prehistoric Thessaly. Cambridge 1912.

Wahl – König (1987) *J. Wahl – H. G. König:* Anthropologische –traumatologische Untersuchung der menschlichen Skelettresten aus dem bandkeramischen Massengrab bei Talheim (Kreis Heilbronn). FBBW 12 (1987) 65–113.

Walde – Willows (1991) *D. Walde – N. D. Willows (eds):* The Archaeology of Gender. Calgary 1991.

Wamser (1980) *L. Wamser:* Eine gefässhaltende Idolfigur der frühen Linearbandkeramik aus Mainfranken. JBBD 21 (1980) 26–38.

Waterbolk (1971) *H. T. Waterbolk:* Food production in prehistoric Europe. In: St. Struever (ed.): Prehistoric Agriculture. New York 1971: 335–360.

Waterbolk (1982) *H- T. Waterbolk:* The spread of food production over the European continent. In: T. S. Övold (ed.): Introduksjonen avjordbruk I Norden. Oslo 1982: 19–37.

Weiner (1992) *J. Weiner:* Der früheste Nachweis der Blockbauweise. Zum Stand der Ausgrabung des bandkeramischen Holzbrunnens. Archäologie im Rheinland 1992: 30–32.

Weiner (1998) *J. Weiner:* Drei Brunnenkästen, aber nur zwei Brunnen: eine neue Hypothese zur Baugeschichte des Brunnens von Erkelenz-Kückhoven.

In: H. Koschik (ed.): Brunnen in der Jungsteinzeit. Internationaler Symposium in Erkelenz. Köln 1998: 95–112.

Whittle (1996) *A. Whittle:* Europe in the Neolithic. The creation of new worlds. Cambridge World Archaeology. Cambridge 1996.

Whittle et al. (2002) *A. Whittle – L. Bartosiewicz – D. Borić – P. Pettitt – M. Richards:* In the beginning: New radiocarbon dates for the early neolithic in Northern Serbia and South East Hungary. In: E. Bánffy (ed.): Prehistoric Studies. In memoriam Ida Bognár-Kutzián. Antaeus 25 (2002) 63–117.

Wielkie – Savina (1997) *N. C. Wielkie – M. E. Savina:* The earliest farmers in Macedonia. Antiquity 71 (1991) 201–207.

Willis (1995) *K. Willis:* The pollen-sedimentological evidence for the beginning of agriculture in South-Eastern Europe and Anatolia. Poročilo 22 (1995) 9–29.

Willis-Bennett (1994) *K. J. Willis – K. D. Bennett:* The neolithic transition – fact or fiction? Palaeoecological evidence from the Balkans. The Holocene 4 (1994) 326–330.

Windl (1990) *H. Windl:* Grabungen in einem Siedlungsareal der Linearkeramik in Asparn/Zaya, BH Mistelbach, Niederösterreich. ZalaiMúz 2 (1990) 19–21.

Windl (1994) *H. J. Windl:* Ein Brunnen? der jüngeren Linearbandkeramik aus Schletz, BH Mistelbach, NÖ (Vorbericht). JAMÉ 36 (1994) 221–224.

Winn – Shimabuku (1989) *Sh. Winn – D. Shimabuku:* Architecture and sequence of building remains. In: M. Gimbutas – Sh. Winn – D. Shimabuku: Akhilleion. A neolithic settlement in Thessaly, Greece, 6400–5600 BC. Los Angeles 1989 32–68.

Winter (1984) *L. Winter:* Breiteneich-Kalkgraben. FÖ 20 (1984) 225.

Woodburn (1982) *J. Woodburn:* Egalitarian societies. Man 17/3 (1982) 431–451.

Wunn (2001) *I. Wunn:* Götter, Mütter, Ahnenkult. Religionsentwicklung in der Jungsteinzeit. Beiheft der Archäologischen Mitteilungen aus Nordwest-Deutschland 36. Rahden/Westf. 2001.

Yakar (1991) *J. Yakar:* Prehistoric Anatolia. The Neolithic transformation and the early chalcolithic period. Monograph series of the Institute of Archaeology, Tel Aviv University. Jerusalem 1991.

Yiouni (1996) *P. Yiouni:* The early neolithic pottery. Technology, typology, functional analysis. In: K. A. Wardle (ed.): Nea Nikomedeia I: The excavation of an early neolithic village in Northern Greece 1961–1964, directed by R. J. Rodden. The excavation and the ceramic assemblage. Athens 1996: 55–193.

Yiouni (2000) *P. Yiouni:* Painted pottery from East Macedonia, in North Greece: technological analysis of decorative techniques. DocPraehist 27 (2000) 199–214.

Zaharia (1962) *E. Zaharia:* Considérations sur la civilisation Criş a la lumiere de la sondages de Leţ. Dacia 6 (1962) 5–51.

Zalai-Gaál (1998) *I. Zalai-Gaál:* Die applizierte Tierplastik der Lengyel-Kultur. ActaArch Hung 50 (1998) 43–90.

Zhao (1998) *Chaohong Zhao:* New achievements in the study on the transitional period from the Palaeolithic to the Neolithic in China. DocPraehist 25 (1998) 27–36.

Zimmermann (1988) *A. Zimmermann:* Steine. In: U. Boehlicke – D. von Brandt – J. Lüning – P. Stehli – A. Zimmermann (eds): Der bandkeramische Siedlungsplatz

Langweiler 8, Gemeinde Aldenhoven, Kreis Düren. Rheinische Ausgrabungen 28 (1988) 569–787.

Zimmermann (1995) *A. Zimmermann:* Austauschsysteme von Silexartefakten in der Bandkeramik Europas. UPA 26. Bonn 1995.

Zólyomi (1980) *B. Zólyomi:* Landwirtschaftliche Kultur und Wandlung der Vegetation. Phytocoenologia 7 (1980) 121–126.

Zólyomi (1995) *B. Zólyomi:* Opportunities for pollen stratigraphic analysis of shallow lake sediments: the example of Lake Balaton. Geo-Journal 36/3 (1995) 237–241.

Zvelebil (1986) *M. Zvelebil:* Mesolithic prelude and neolithic revolution. In: M. Zvelebil (ed.): Hunters in Transition. Cambridge 1986: 5–15.

Zvelebil (1989) *M. Zvelebil:* On the transition to farming in Europe, or what was spreading with the Neolithic: a reply to Ammerman. Antiquity 63 (1989) 379–383.

Zvelebil (1994) *M. Zvelebil:* Plant use in the mesolithic and its role in the transition to farming. PPS 60 (1994) 35–74.

Zvelebil (1995a) *M. Zvelebil:* Hunting, gathering or husbandry? Management of food resources by the late mesolithic communities of temperate Europe. In: D. V. Campana (ed.): Before Farming: a hunter-gatherer society and subsistence. MASCA research papers in science and archaeology, Supplement 12. Philadelphia 1995: 79–104.

Zvelebil (1995b) *M. Zvelebil:* A final word on "Man and Sea in the Mesolithic" – good news for women? In: *A. Fischer (ed.) (1995)* 421–422.

Zvelebil (2000) *M. Zvelebil:* The social context of the agricultural transition in Europe. In: C. Renfrew – K. Boyle (eds): Archaeogenetics: DNA and the population of Europe. McDonald Institute monographs. Cambridge 2000: 57–79.

Zvelebil (2001) *M. Zvelebil:* The agricultural transition and the origins of neolithic society in Europe. DocPraehist 28 (2001) 1–26.

Zvelebil – Dolukhanov (1991) *M. Zvelebil – P. Dolukhanov:* The transition to farming in Eastern and Northern Europe. JWP 5/3 (1991) 233–278.

Zvelebil – Lillie (2000) *M. Zvelebil – M. Lillie:* Transition to agriculture in Eastern Europe. In: *D. Price (ed.)* (2000) 57–92.

Varia Archaeologica Hungarica

I. *Miklós Takács*: Die arpadenzeitlichen Tonkessel im Karpatenbecken. 1986, 172 pp. + 111 Tafeln, 2 Karten

II. *Sándor Bökönyi* (ed.): Neolithic of Southeastern Europe and its Near Eastern Connections (International conference Szolnok-Szeged, 1987). 1989, 316 pp.

III. *Csanád Bálint* (hrsg.): Die Keramik der Saltowo-Majaki Kultur und ihrer Varianten. 1990, 342 pp.

IV. *Csanád Bálint* (hrsg.): Die spätawarenzeitliche Siedlung von Eperjes (Kom. Csongrád). 1991, 103 pp. + 34 Tafeln

V. *Benkő Elek:* A középkori Keresztúr-szék régészeti topográfiája (Zusammenfassung: Die archäologische Topographie des mittelalterlichen Stuhles Keresztúr). 1992, 272 pp. + 84 Tafeln, 3 Karten

VI. *László Kovács:* Das früharpadenzeitliche Gräberfeld von Szabolcs. 1994, 227 pp. + 93 Abbildungen, 20 Tabellen, 6 Tafeln, 1 Karte

VII. *Kovács László:* A kora Árpád-kori magyar pénzverésről. Érmetani és régészeti tanulmányok a Kárpát-medence I. (Szent) István és II. (Vak) Béla uralkodása közötti időszakának (1000-1141) érmeiről (Zusammenfassung: Über die ungarische Münzprägung in der frühen Arpadenzeit. Numismatisch-archäologische Studien über die Münzen aus dem Zeitraum zwischen den Regierungszeiten Stephans I [des Heiligen] und Bélas II. [des Blinden] [1000-1141] im Karpatenbecken). 1997, 406 pp. + 24 Abbildungen, 99 Tabellen, 20 Tafeln

VIII. *Tivadar Vida:* Die awarenzeitliche Keramik. Teil I. (6.-7. Jh.) 1998, 424 pp. + 86 Abbildungen, 175 Tafeln, 8 Farbtafeln

IX. *Mária Font – Mária Sándor* (hrsg.): Mittelalterliche Häuser und Strassen in Mitteleuropa (Konferenz Pécs, 1997). 2000, 224 pp.

X. *Csanád Bálint* (hrsg.): Kontakte zwischen Iran, Byzanz und der Steppe im 6.-7. Jh. (Tagungsmaterialien, Rom, 25.-28. Oktober 1993). 2000, 329 pp.

XI. *Imre Holl:* Funde aus dem Zisterzienkloster von Pilis. Die Ausgrabungen in Pilisszentkereszt. I. 2000, 76 pp. + 141 Abbildungen, 41 Tafeln

XII. *Gyula Siklósi:* Die mittelalterlichen Wehranlagen, Burg- und Stadtmauern von Székesfehérvár. 1999, 73 pp. + 200 Abbildungen

XIII. *József Szentpéteri* (hrsg.): Archäologische Denkmäler der Awarenzeit in Mitteleuropa. 2002, 700 pp. + Beilagen

XIV. *Hajnalka Herold*: Die frühmittelalerliche Siedlung von Örménykút 54. 2004. 328 pp. + 38 Abbildungen, 80 Tafeln, 2 Karte

In preparation

Csanád Bálint: Der Schatz von Nagyszentmiklós (Archäologische Studien)
Bálint Csanád: A nagyszentmiklósi kincs (Régészeti tanulmányok)
Imre Holl: Fundkomplexen des 15.-17. Jahrhunderts aus dem Burgpalast von Buda
Csanád Bálint (hrsg.): Kontakte zwischen dem Karpatenbecken und dem Balkan im Frühmittelalter
Elek Benkő et al.: Das Zisterzienserkloster von Pilis im Mittelalter